

Environmental Concerns With Reuse and Disposal of Chromated Copper Arsenate (CCA) Treated Wood

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Chief, Bureau of Solid and Hazardous Waste

Florida Department of Environmental Protection

New CCA Research Sponsored by the Florida Center For Solid and Hazardous Waste Management

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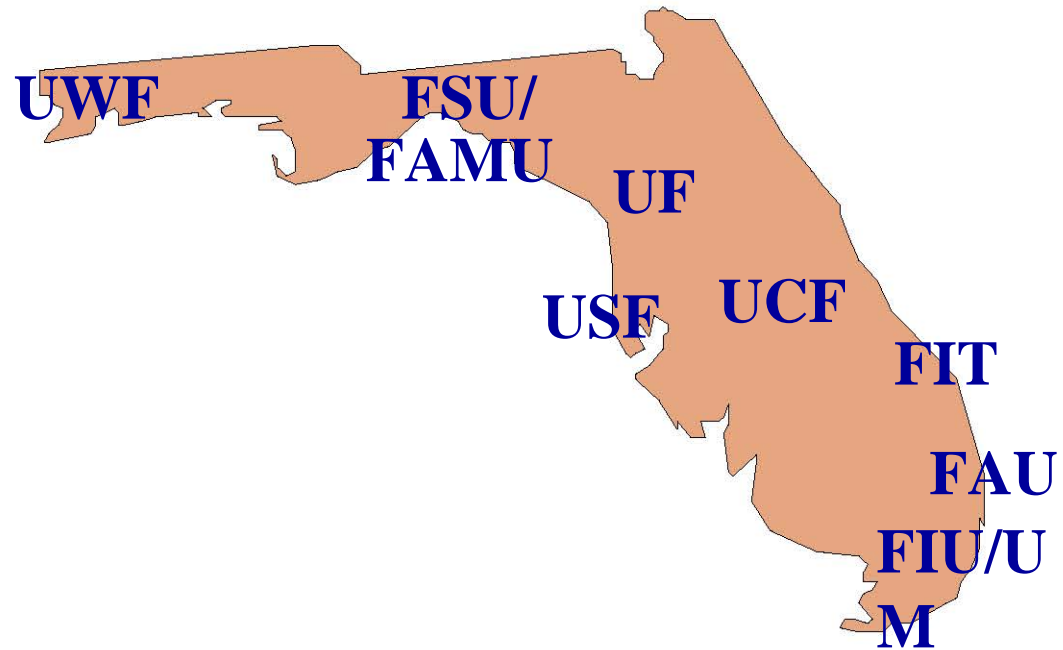
Timothy Townsend, Ph.D., University of Florida,
Gainesville, Florida

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Florida

FLORIDA
CENTER
FOR SOLID &
HAZARDOUS
WASTE
MANAGEMENT

The Center's mission is to coordinate and engage in research relating to solid and hazardous waste management issues

Participating Institutions



I. Overview of
CCA Treated Wood In Florida:
Types, Amounts and
Disposal Forecast

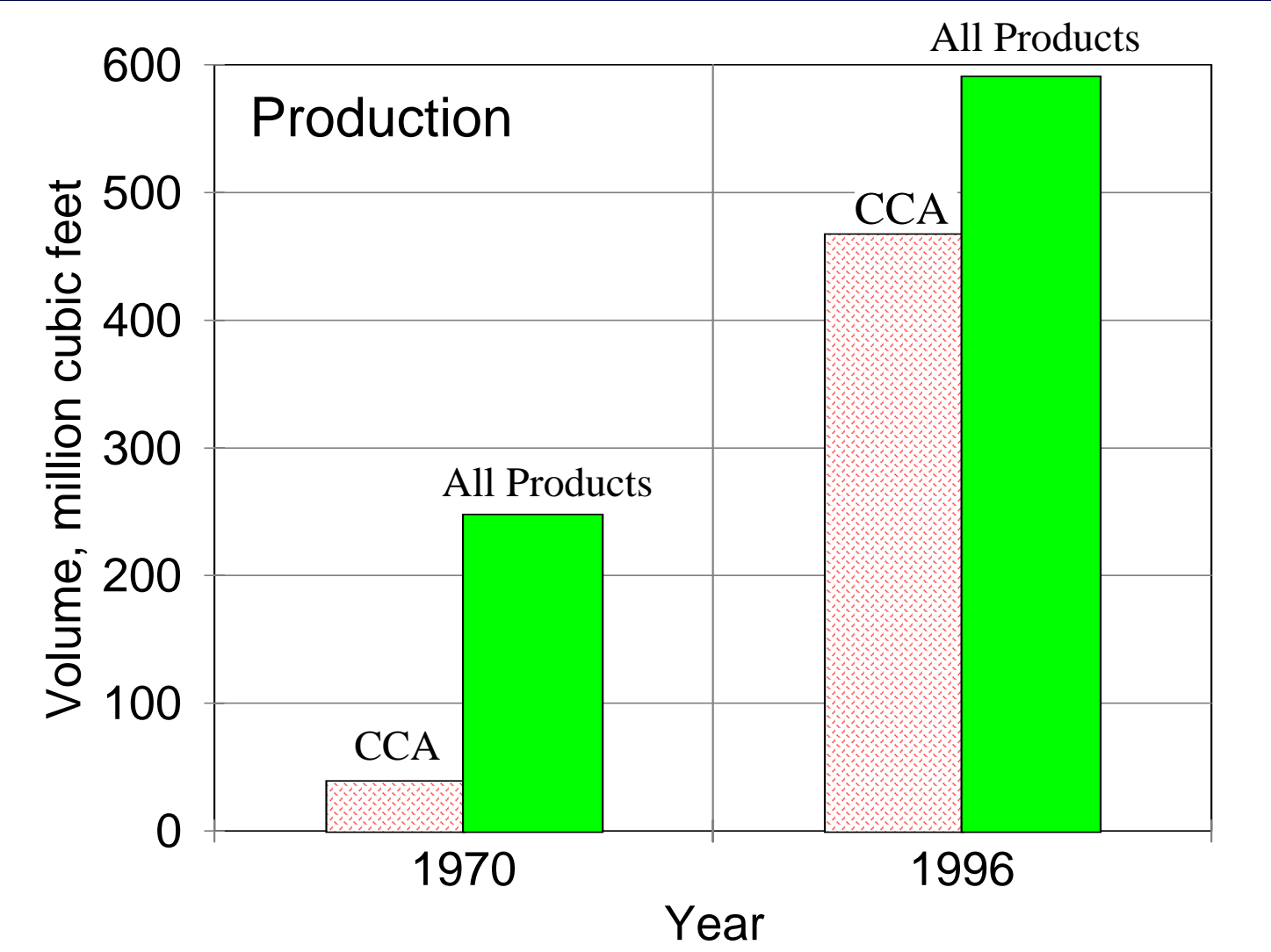




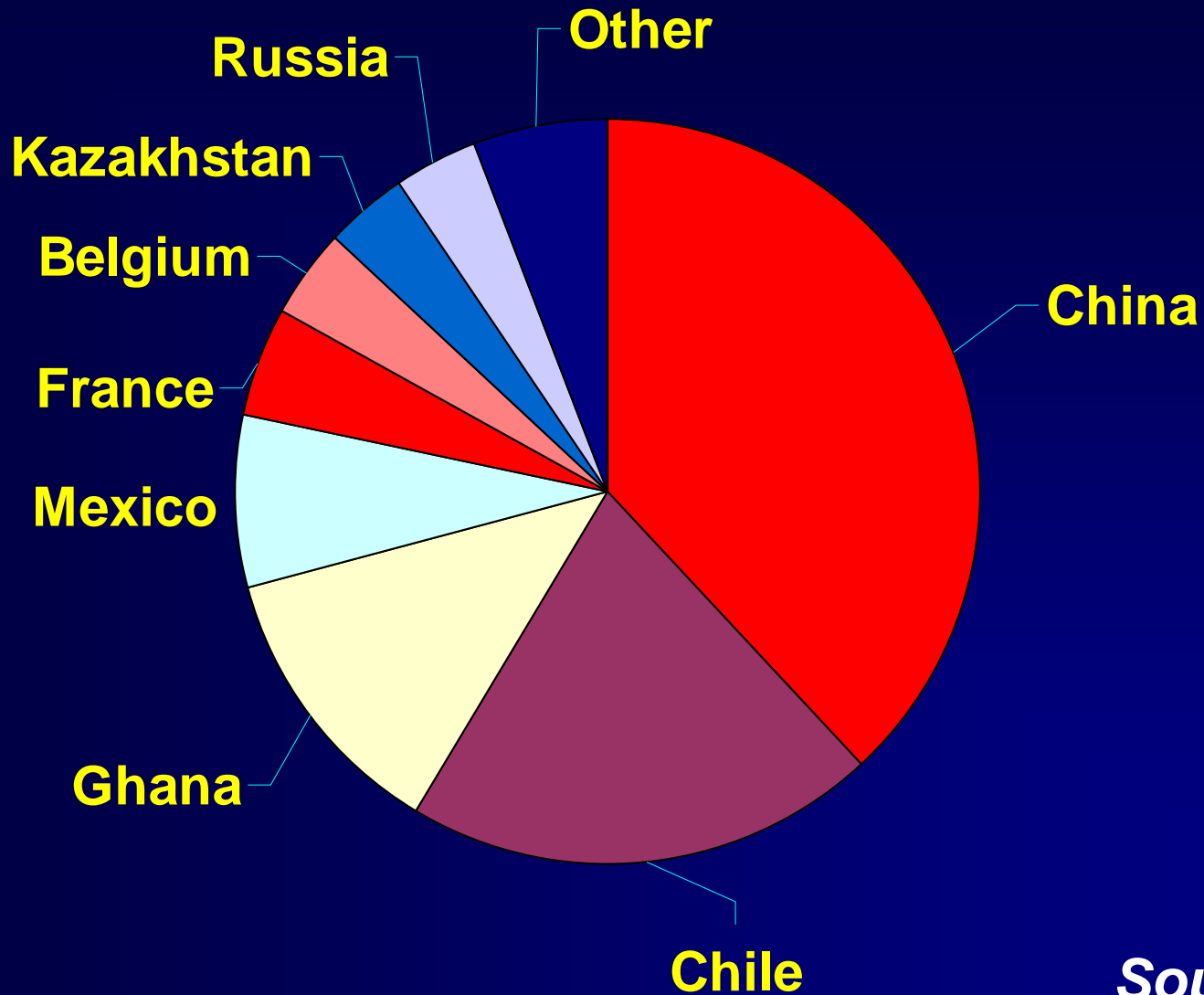
Introduction for CCA Treated Wood

- Most Common Wood Preservative Used in the U.S. and Florida, Approx. 80% of the wood preservation market (including creosote and pentachlorophenol)
- Represents over 97% of the waterborne wood preservative market

Introduction



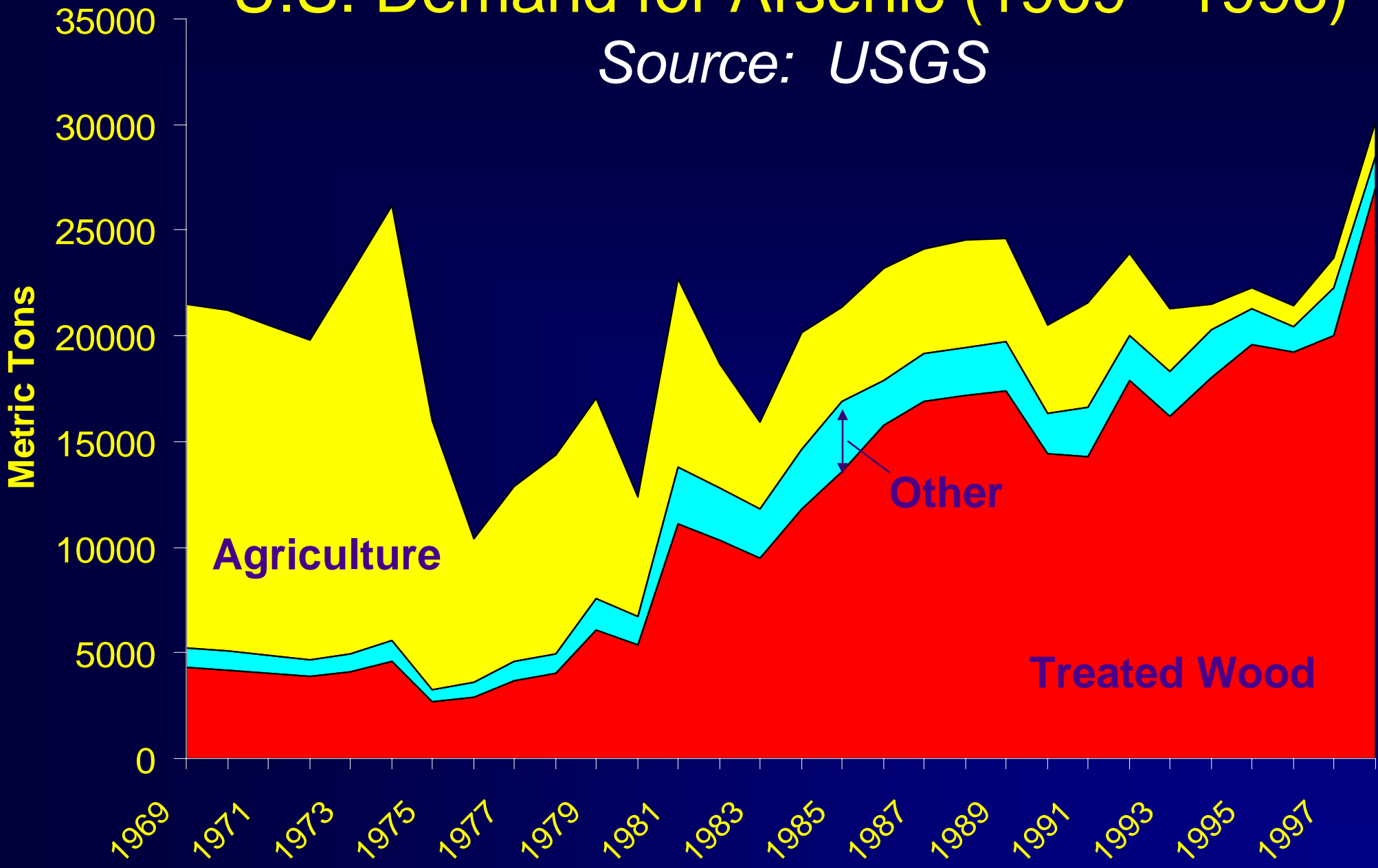
World Production of Arsenic Trioxide: 1998



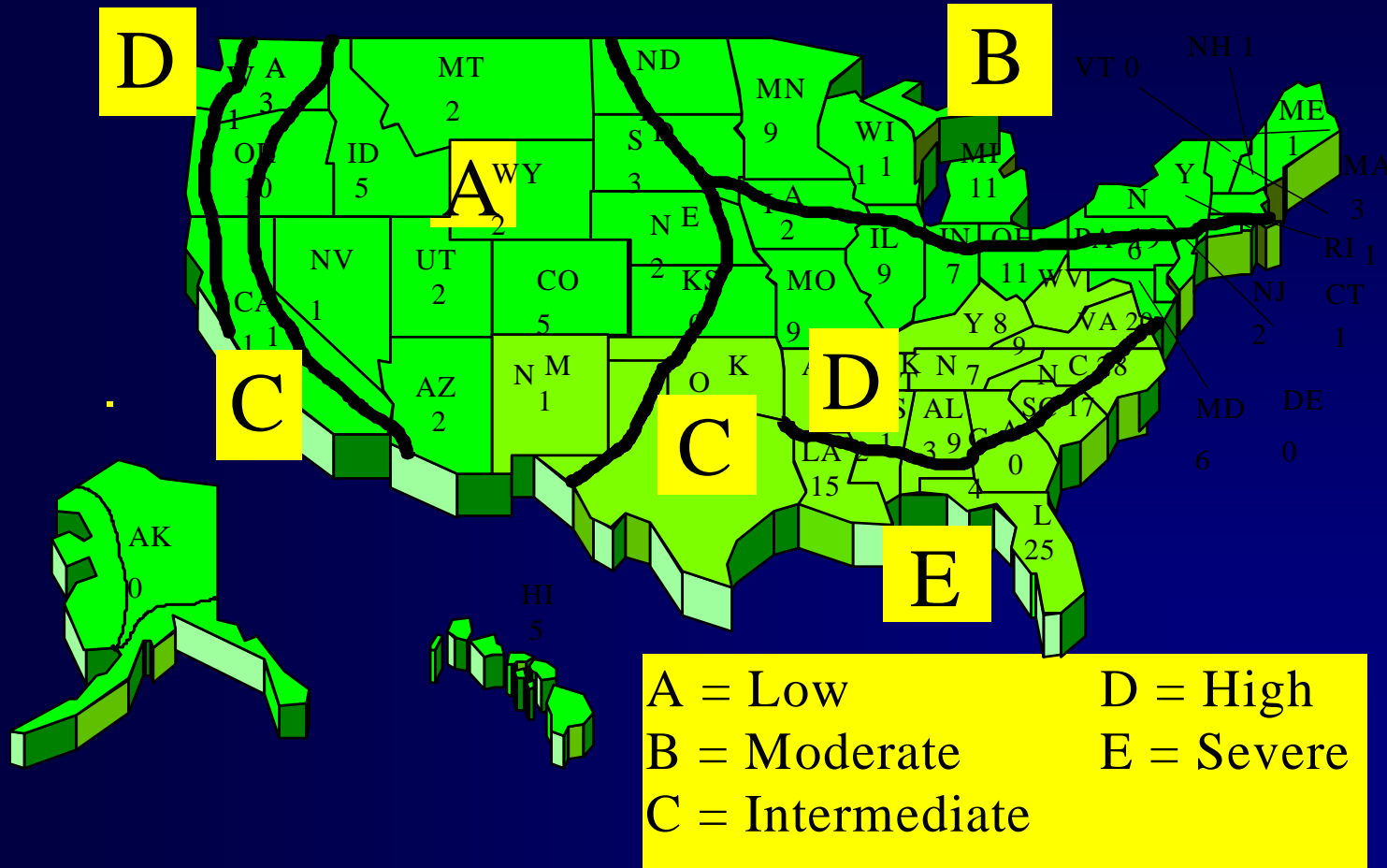
Source: USGS

U.S. Demand for Arsenic (1969 - 1998)

Source: USGS



Introduction



Introduction

The Amounts of CCA Used For Different Applications



Application	Retention Value (lb/ft ³)
Above ground: lumber, timbers, and plywood	0.25
Ground/Freshwater contact: lumber, timbers, plywood	0.40
Salt water splash, wood foundations: lumber, timbers, and plywood Structural poles	0.60
Foundation/Freshwater: pilings and columns	0.80
Salt water immersion: pilings and columns	2.50

Table I-2: Retention Requirements for CCA-Treated Wood (AWPA, 1996)

Motivation

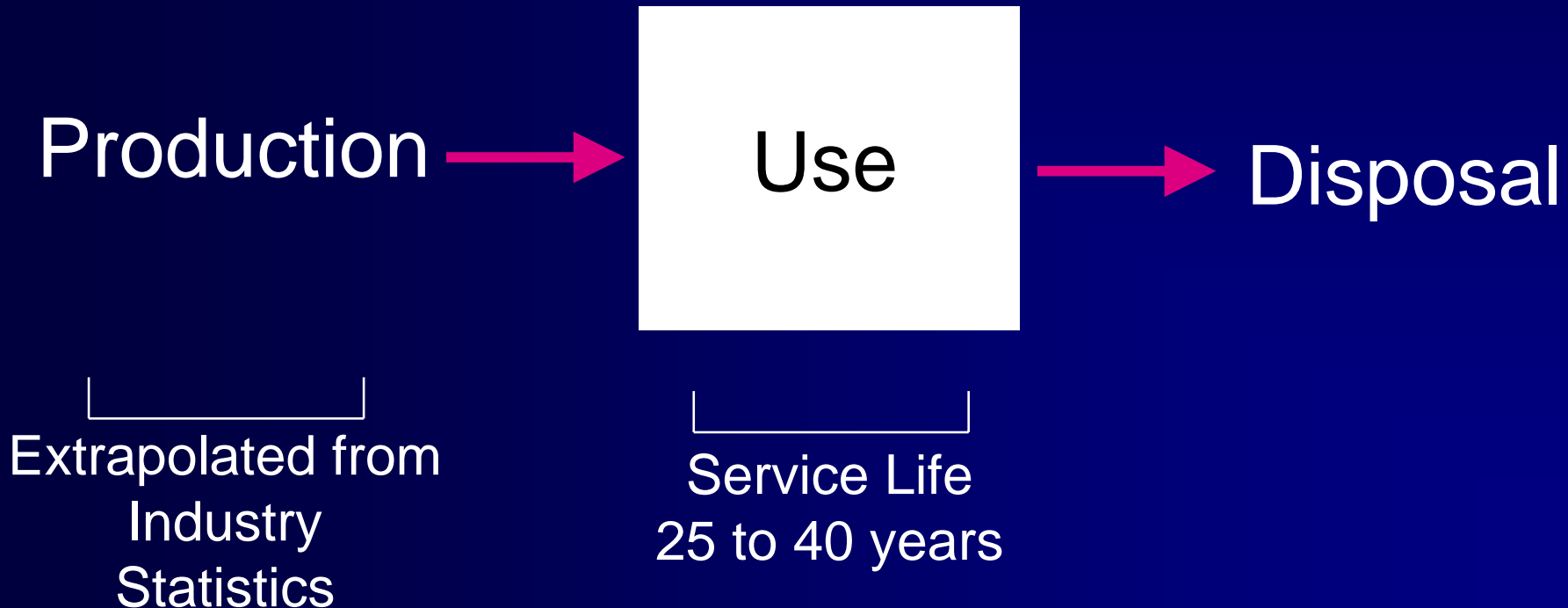
- CCA ---> Chromated Copper Arsenate
- CCA-Treated Wood contains high concentrations of chromium, copper, and arsenic (≈ 1000 mg/kg for each metal)
- When burned, metals accumulate in the ash (concentrations $\approx 10,000$'s mg/kg for each)

Motivation

		Unburned Wood		Burned Wood	
Metals	Reg. Limit (mg/kg)	Other Woods (mg/kg)	CCA-Trt Wood (mg/kg)	Other Woods (mg/kg)	CCA-Trt Wood (mg/kg)
Arsenic	41	DL-1.5	290-1200	7-74	8600-64,000
Chromium	1,200	DL-21	1740-2400	12-140	1700-41,000
Copper	1,500	DL-8.5	1000-1100	41-190	2600-39,000

Disposal Forecast

Based Upon A Mass Balance Approach

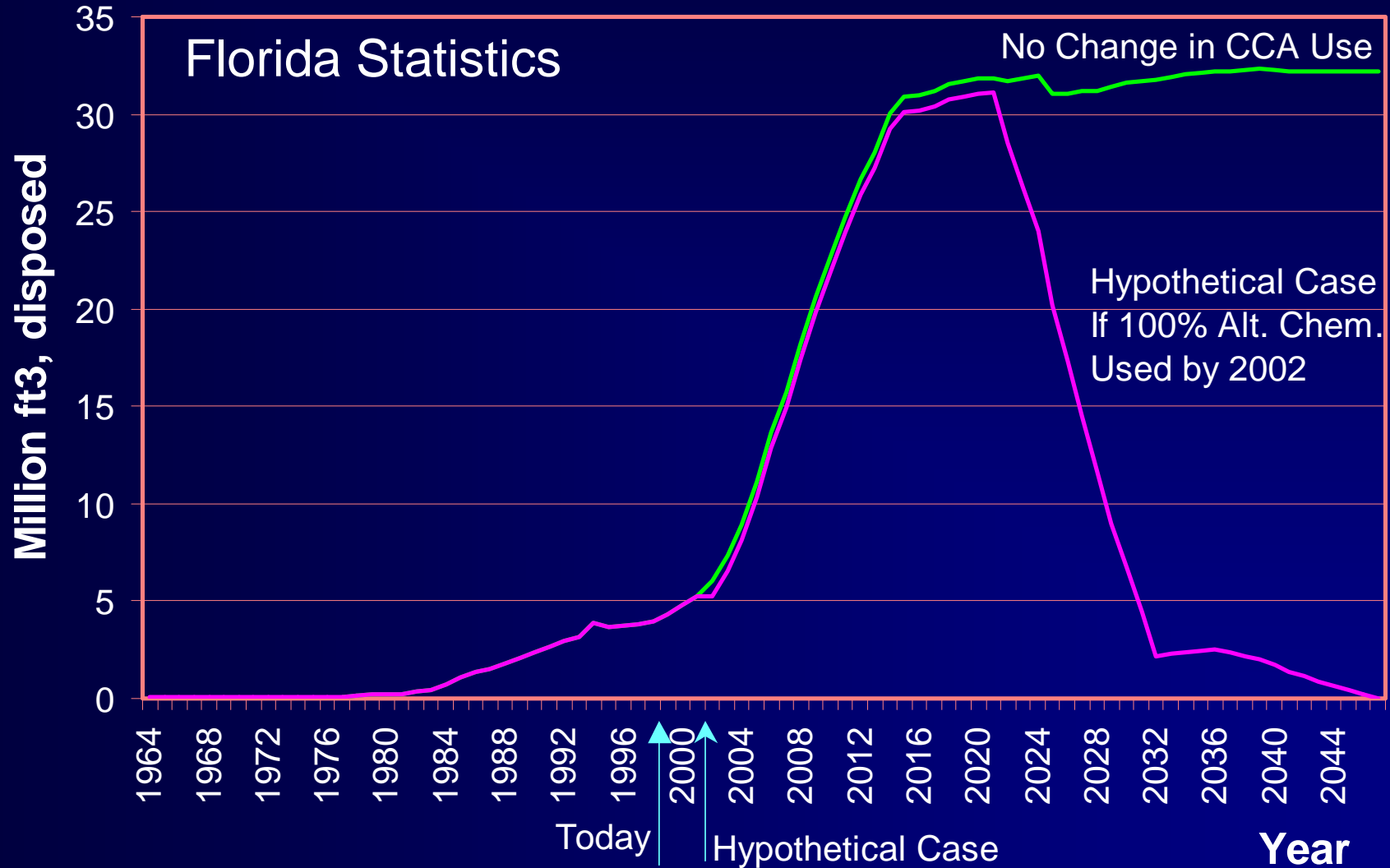


Disposal Forecast

Quantity of CCA-Treated Wood Sold in Florida (1996),

- 28 million ft³ of wood product
 - (17 million treated in FL and 11 million imported)
- 6300 tons of chemical
 - 3000 tons as CrO₃ (1600 tons as Cr)
 - 1100 tons as CuO (920 tons as Cu)
 - 2200 tons as As₂O₅ (1400 tons as As)

Long-term Disposal Forecast

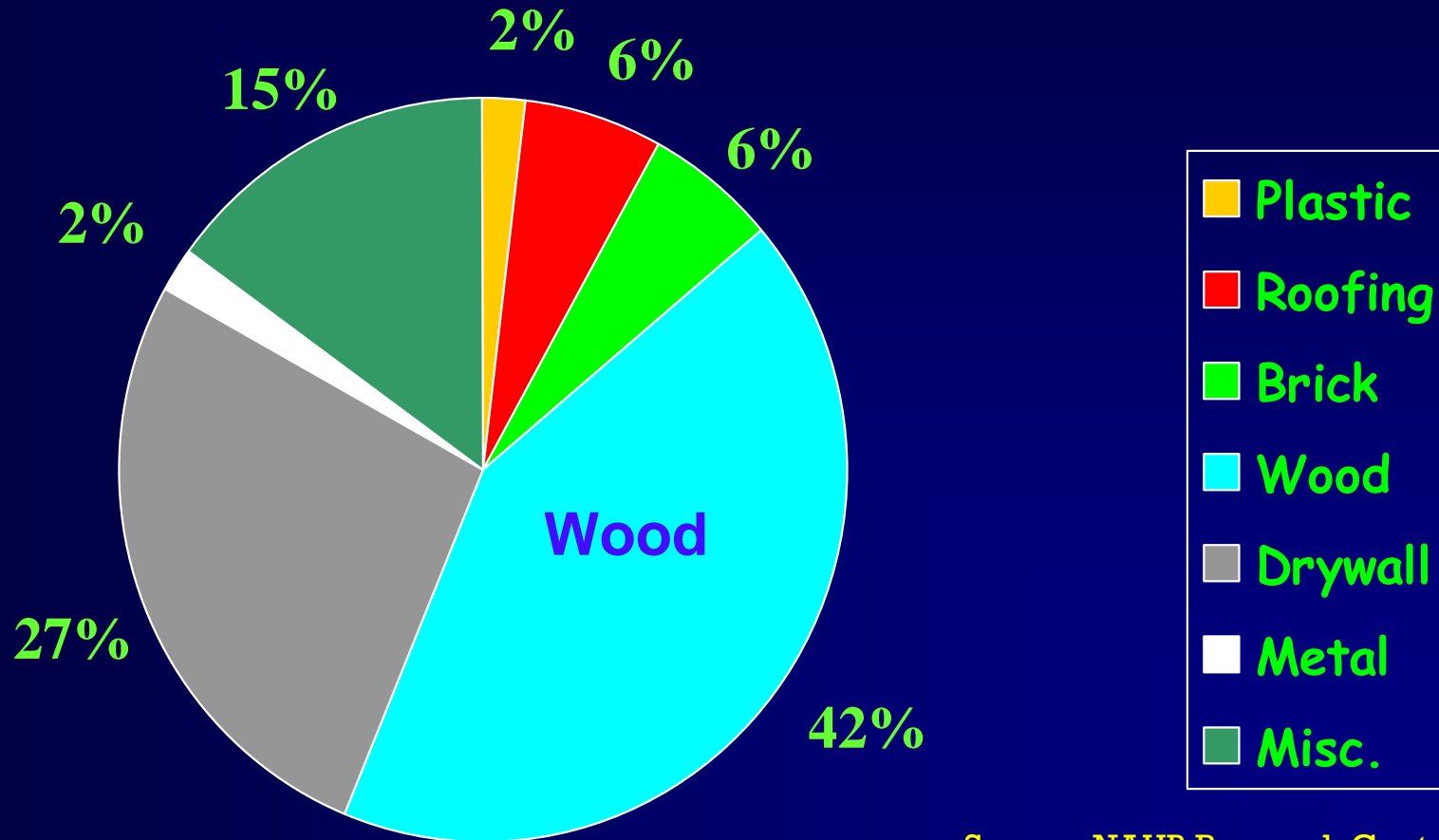


II. Fate of CCA Treated Wood Waste in Florida

How is Discarded CCA-Treated Wood Managed in Florida?

- It is estimated that most discarded CCA-treated wood enters the construction and demolition (C&D) debris waste stream.
- A small amount is disposed via lined municipal waste landfills and waste-to-energy facilities.
- Reuse and recycling is minimal.

Wood is One of the Largest Components of C&D Debris



Source: NAHB Research Center
Average of 4 Sites

How is Wood in the C&D Debris Stream Managed?

- C&D Landfills
- C&D Recycling Facilities
 - Major Market: Wood Fuel
 - Growing Market: Landscape Mulch



Wood from C&D Debris

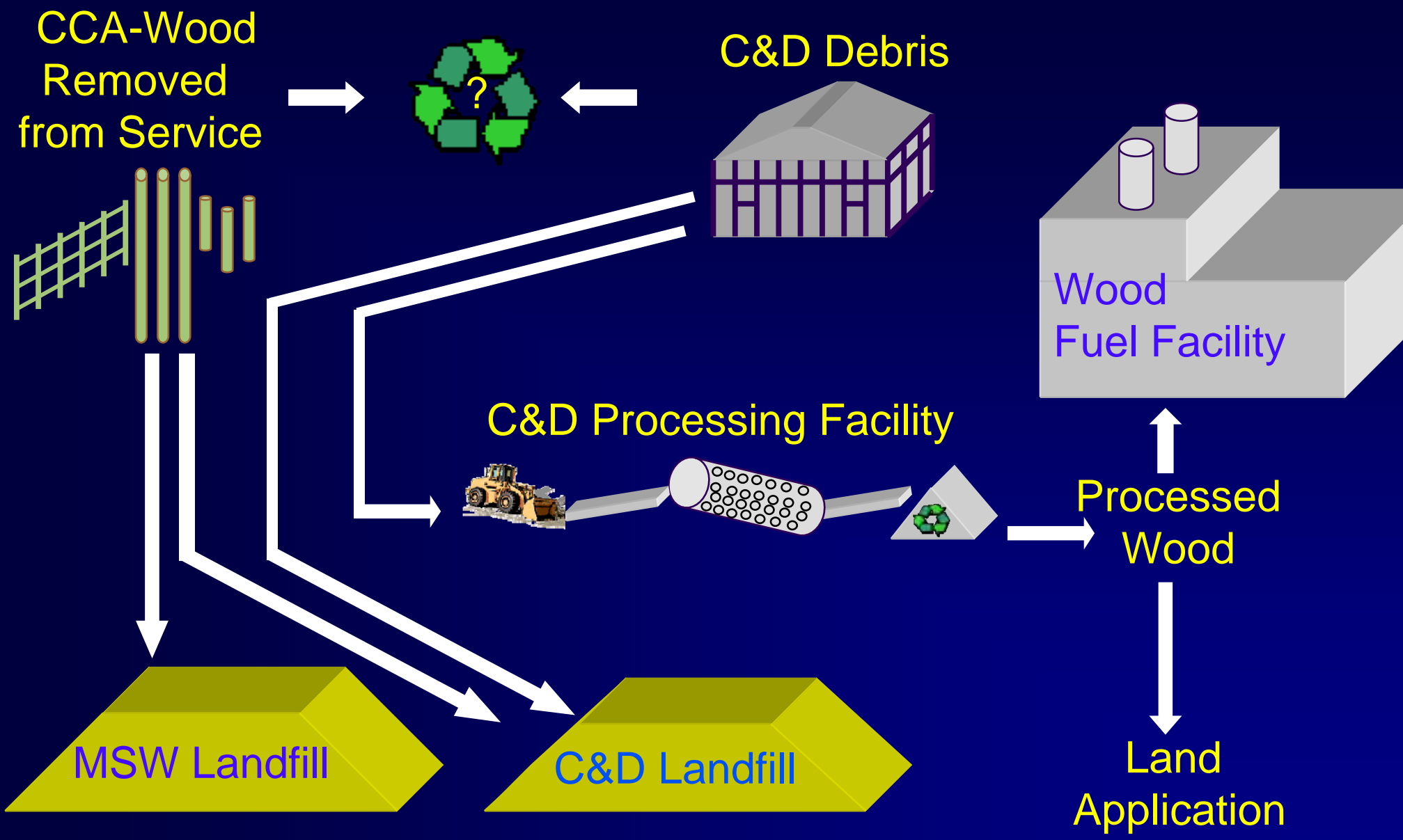


Processed C&D Wood



How is CCA-Treated Wood Managed?

- C&D debris processing facilities that separate wood for reuse and recycling are required to remove CCA-treated wood.
- Very difficult to accomplish.
- Very difficult to enforce.
- Facility visits indicate that very little separation is occurring.



CCA-Wood
Removed
from Service

C&D Debris

C&D Processing Facility

Wood
Fuel Facility

Processed
Wood

MSW Landfill

C&D Landfill

Land
Application

Separated CCA Utility Poles





CCA-Treated Wood is Visible at Times



Most of the time, the identification of CCA-treated wood is difficult, especially for wood from demolition.



Once wood is processed, separation of CCA-treated wood is not a realistic possibility.

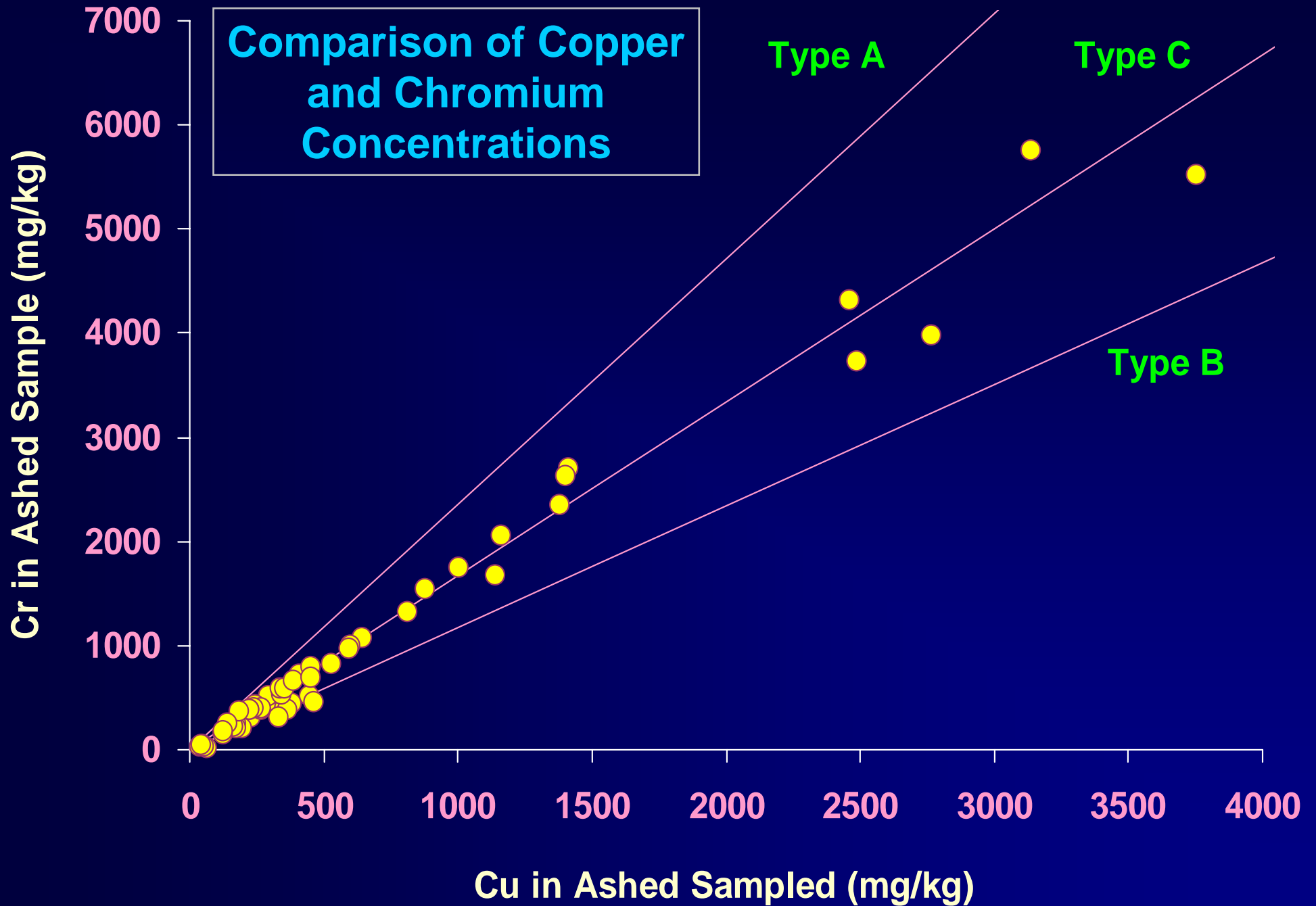


How much CCA-treated wood is present in C&D debris wood in Florida?

- Samples of processed wood were collected from 12 facilities around the state.
- Samples were homogenized and analyzed for Cu and Cr Concentrations.
- A mass balance was performed to estimate the amount of CCA-treated wood present.

Sample Collection





Results

- The average amount of CCA-treated wood in recovered wood from C&D waste processing facilities was approximately 6% (based on 0.25 pcf, type C).
- This amount ranged from background levels to over 20%.

Florida Regulatory and Cleanup Criteria for Arsenic

- Drinking Water MCL: 50 ug/L
- TCLP: 5 mg/L
- Soil Clean Up Target Levels (SCTLs)
 - Residential: 0.8 mg/kg
 - Industrial: 3.7 mg/kg
 - Leachable: 27.5 mg/kg

Conclusions of the 1999 National Research Council report on the Drinking Water Standard for arsenic:

“...it is the subcommittee’s consensus that the current EPA MCL for arsenic in drinking water of 50ug/l does not achieve EPA’s goal for public-health protection and, therefore, requires downward revision as promptly as possible.”

Ash from the Combustion of Wood

- Much of the recovered wood from C&D processing is combusted as fuel.
- Research indicates that 6% of this wood on average is CCA-treated wood.
- The presence of CCA-treated wood in the fuel stream presents potential environmental risks in regard to air emissions and management of the ash.



Note on Arsenic

- It is well documented that arsenic volatilizes at higher temperatures.
- The amount of oxygen also plays a role.
- In CCA-treated wood combustion studies in the literature, arsenic is often missing from the mass balance at the end of the study.
- High technology air pollution control equipment must be installed at facilities whose fuel stream includes CCA-treated wood.

Characterization of Ash

- Ash could not be obtained from the wood-burning facilities.
- Ash was produced in an industrial furnace.
- Specific wood streams were combusted.
- Ash was chemically analyzed to assess management options.

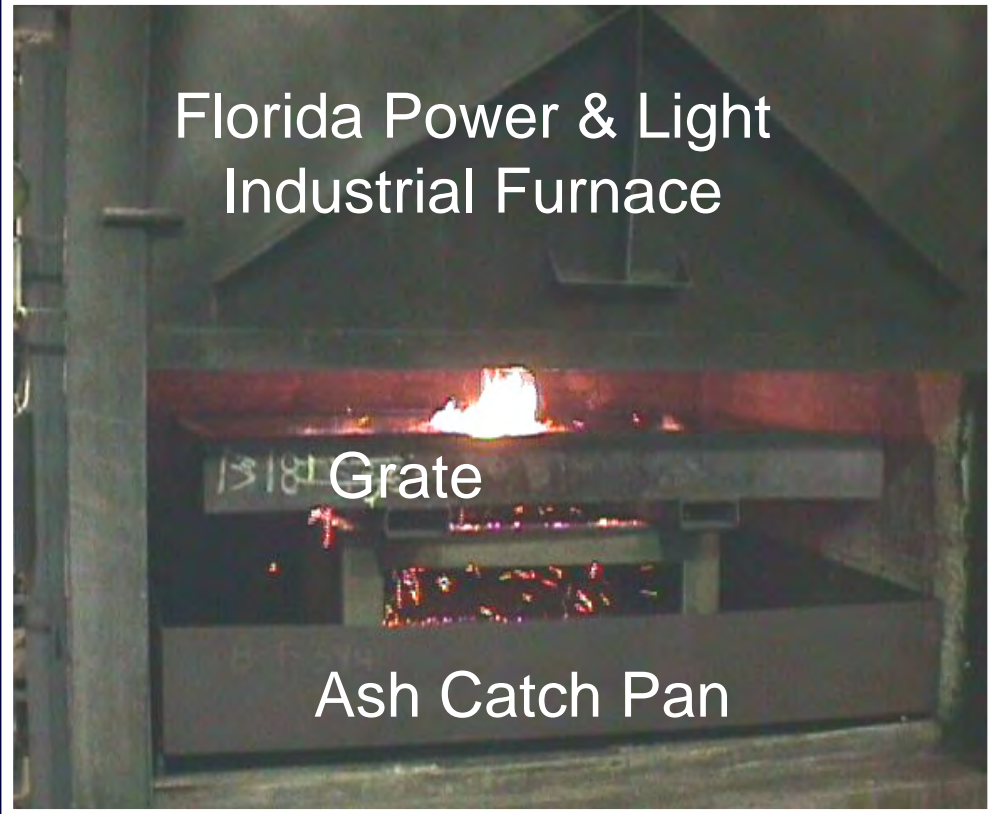
Summary of Wood Burns

<u>Batch #</u>	<u>Description of Batch</u>	<u>Burn Time</u> <u>(min)</u>	<u>Average Burn</u> <u>Temp. (°F)</u>
1	Untreated Wood	90	1018
2	CCA-treated wood, 0.25 pcf	90	1014
3	CCA-treated wood, 0.60 pcf	95	1039
4	CCA-treated wood, 2.50 pcf	95	953
5	Weathered Wood	105	1030
6	C&D 1	130	928
7	C&D 2	90	821
8	C&D 3	85	829
9	Mixture 1	95	1125
10	Mixture 2	105	1005

Sample Preparation, Shredding



Sample Ashing



Analysis of Ash for Direct Human Exposure Risk

- All ash samples exceeded Florida's residential SCTL for arsenic.
- All samples, with the exception of untreated wood ash, exceeded Florida's residential SCTL for chromium.

Analysis of Ash for Leachability

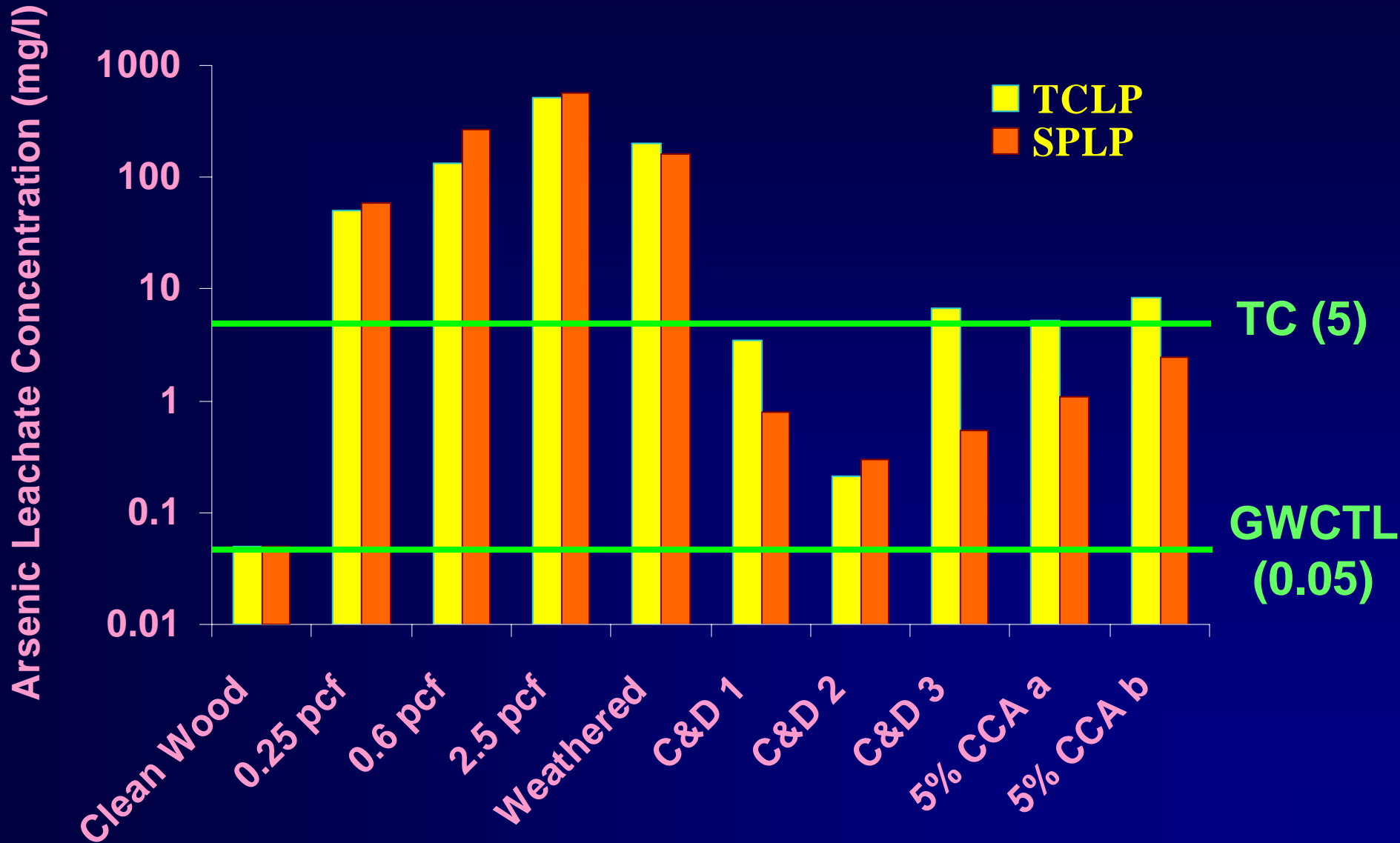
■ Conduct TCLP

- Is the ash a hazardous waste?
- How much CCA causes the ash to be hazardous?

■ Conduct SPLP

- Will metals leach from the ash under simulated rainfall?

TCLP & SPLP Comparison for Arsenic



Summary

- The amount of CCA currently in the C&D wood stream is approximately the same amount (6%) as will result in ash from combustion of the wood to be hazardous by toxicity characteristic for arsenic, and in some cases chromium.

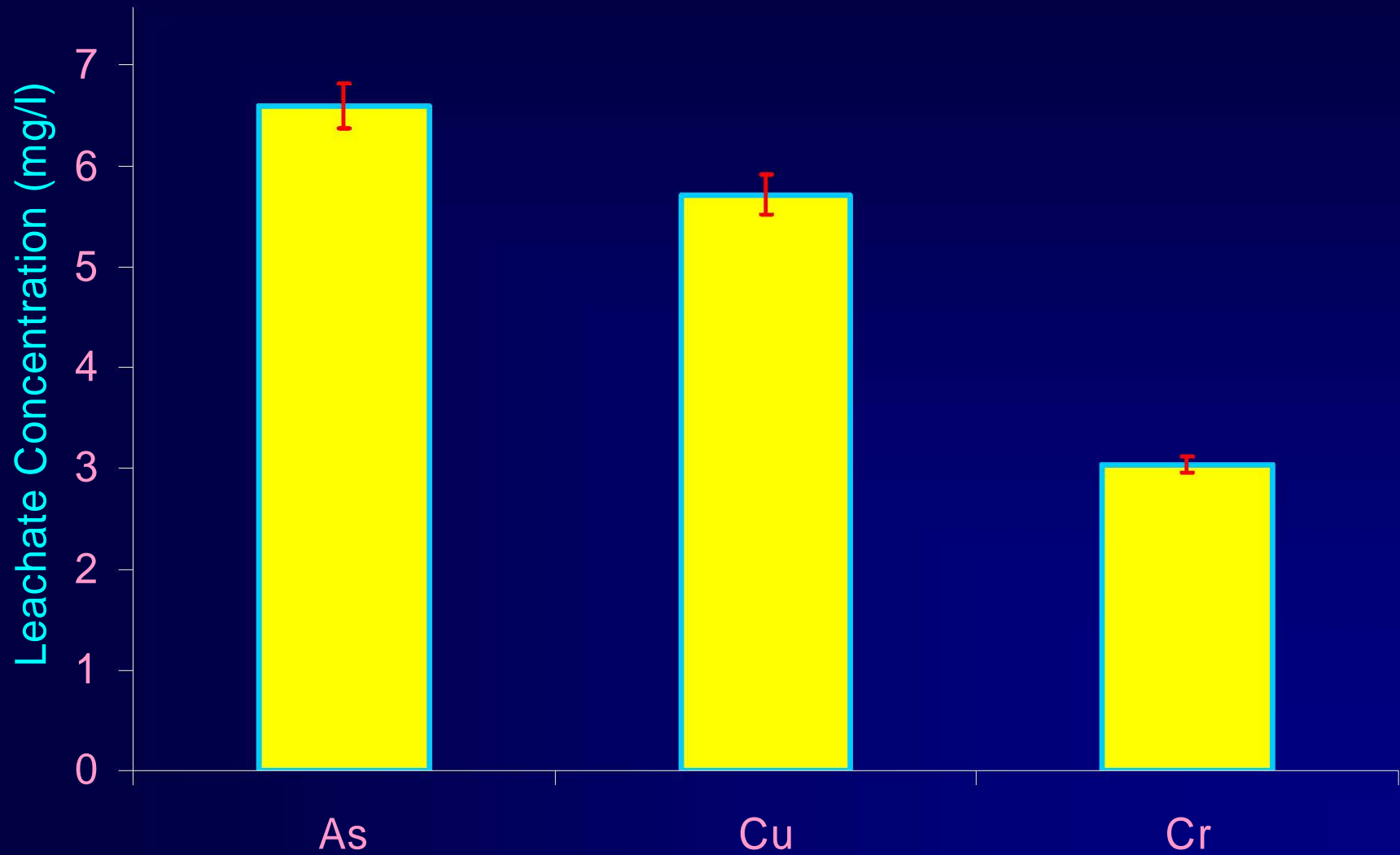
How Does CCA-Treated Wood Behave under TCLP?

- Discarded arsenical-treated wood is exempt under RCRA.
- This is not recognized by all states.
- TCLP results are also used to make other risk-based decisions regarding the management of a waste.

Consider TCLP Results for a Commercially Purchased CCA-Treated Wood

- 0.25 pcf, Type C Dimensional Lumber.
- Size-reduced to consistency of sawdust.

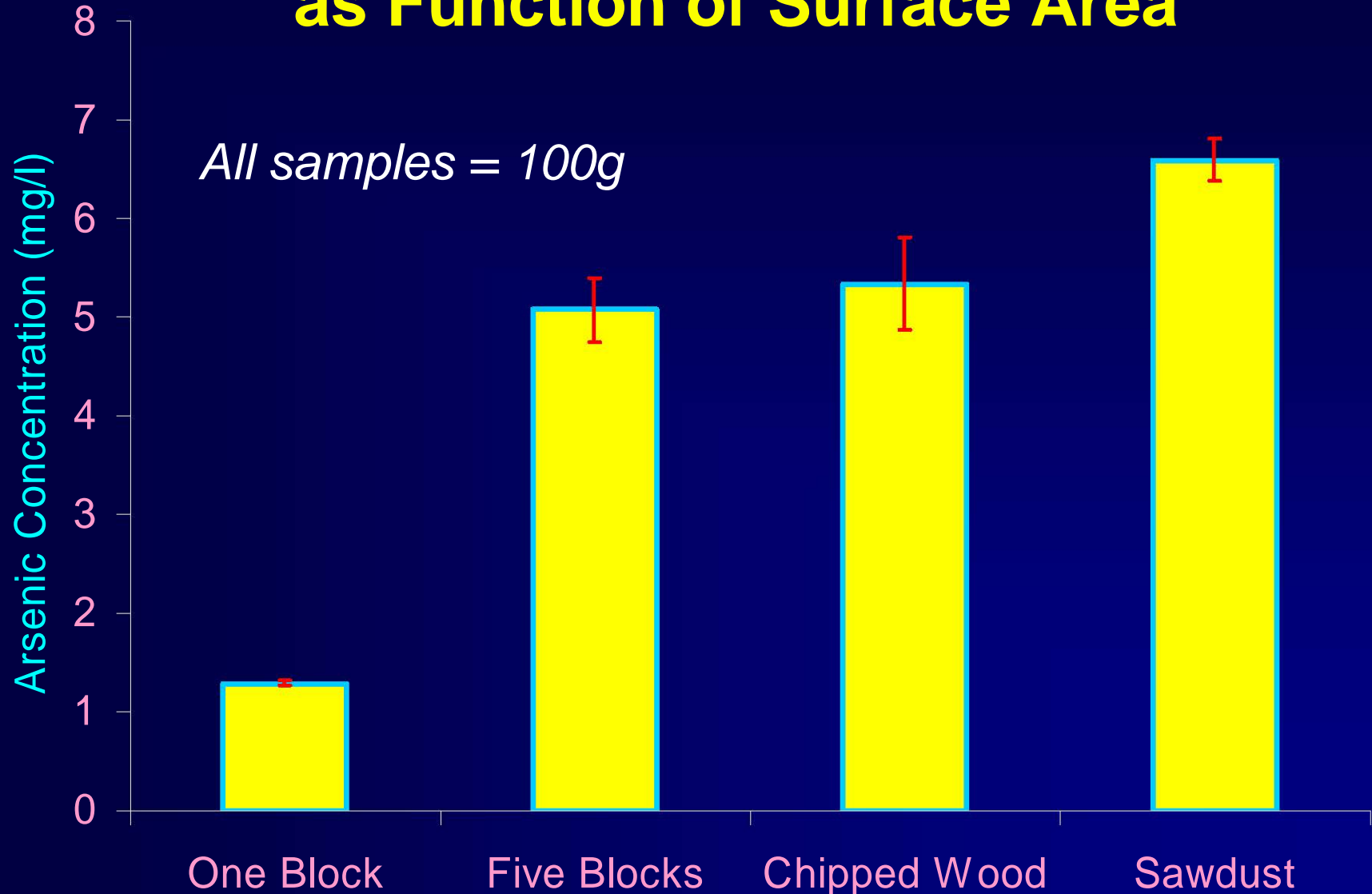
TCLP Results on 0.25 pcf CCA (Type C) Sawdust



Questions Have Been Raised on the Effect of Size Reduction

- The smaller the size, the greater the surface area available for leaching.
- Same wood sample was tested at different sizes.

As TCLP Results 0.25 pcf CCA (Type C) as Function of Surface Area



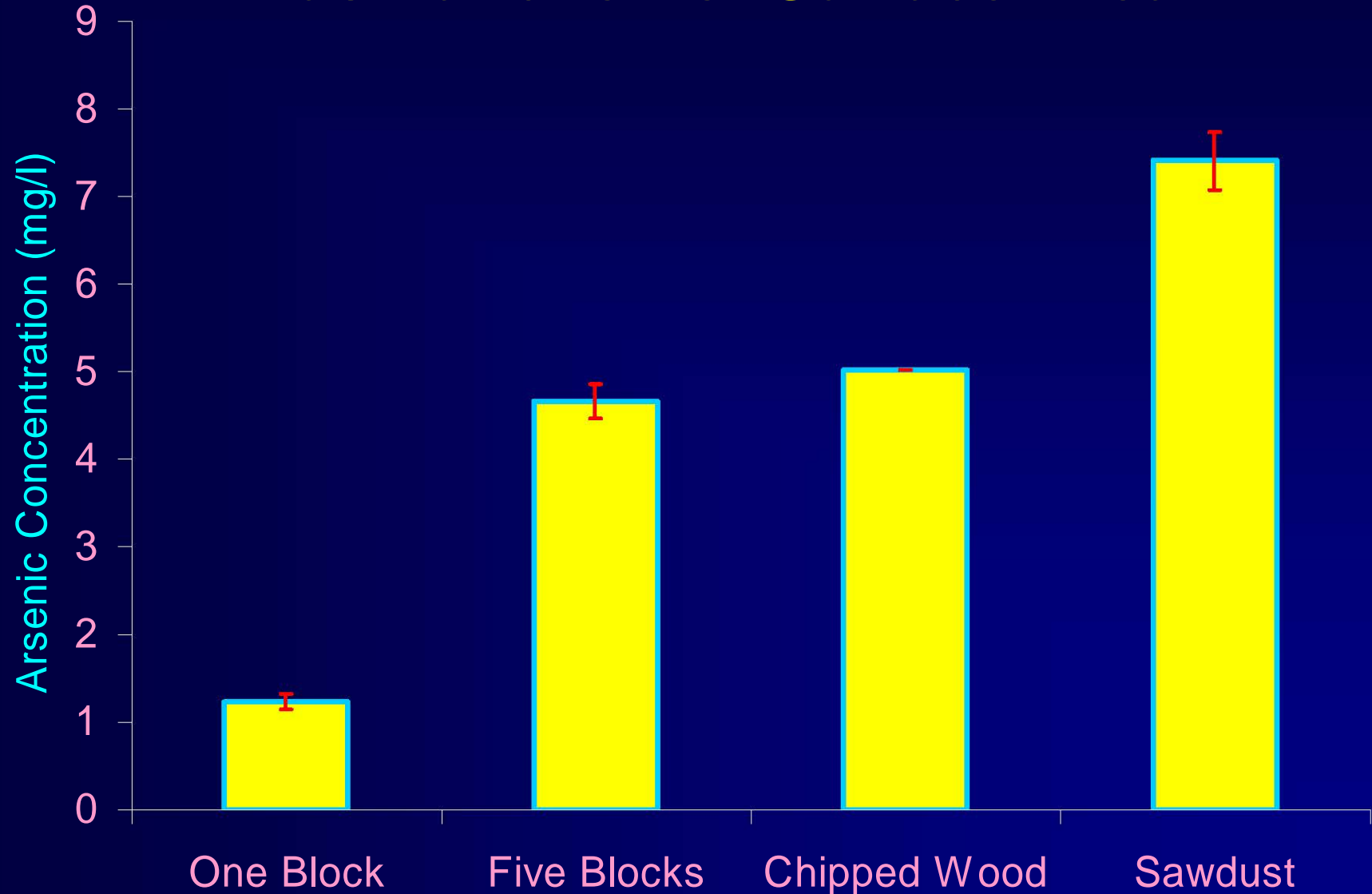
Implication of TCLP Results

- Tests were only for one wood sample, and thus can not be used to draw conclusions for all similar wood products (more testing will be conducted).
- Results fall within the range of previously reported data.
- Results indicate that CCA-treated wood of this nature should not be disposed in unlined landfills.

The TCLP is Sometimes Considered Too “Aggressive”

- The acetic acid nature of the TCLP leaching fluid is considered by some to be an unrealistic occurrence in the “real world.”
- The SPLP has been designed to look at leaching from acid rain.
- SPLP was conducted on the same wood sample.

As SPLP Results 0.25 pcf CCA (Type C) as Function of Surface Area



Implication of SPLP Results

- Results for SPLP are similar to TCLP, especially for Arsenic and Chromium.
- Confirms that CCA-treated wood should not be disposed in unlined landfills, regardless of the acidity of the leaching solution.

What About Reuse Outside the Landfill?

- It is widely agreed that size-reduced CCA-treated wood by itself should not be used as a landscape mulch.
- But if CCA-treated wood is occurring in processed C&D wood, how much can be present with causing undue risk?

Leaching from Land Applied Mulch

- The SPLP is the test most commonly used to assess leaching from a land applied waste.
- Previous SPLP results were for whole wood.
- A small number of tests were performed on various mixtures of CCA-treated wood and untreated wood.



**FREE
MULCH**

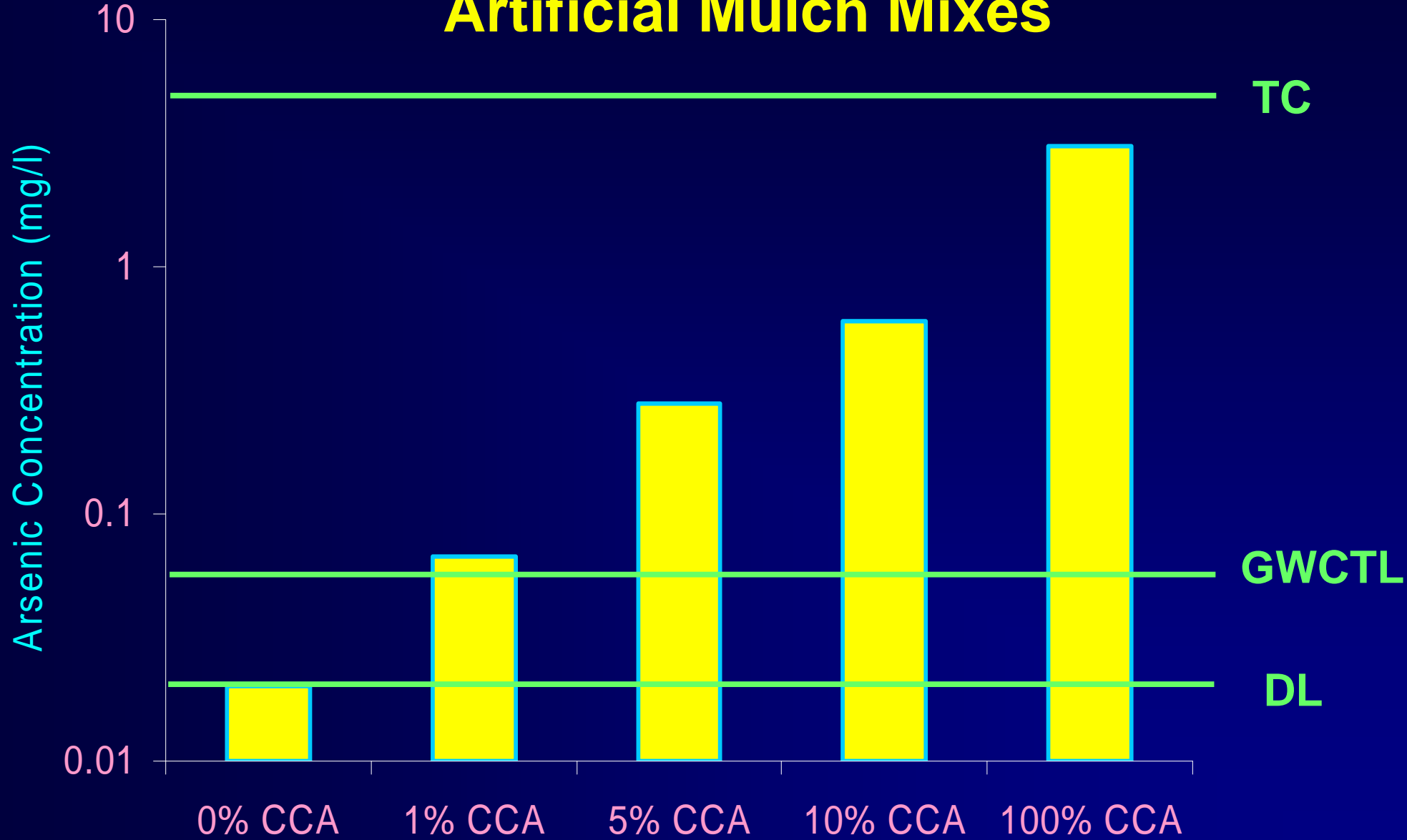
A GIFT FROM OF

HELP YOURSELF

OR
SPECIALLY TO HELP & ASSIST
IN THE TRAILER AND PUT
TO THE GIVE YOUR LEADERSHIP
BENEFIT TO



As Concentration in SPLP Leachate from Artificial Mulch Mixes



Land Application Considerations

- If the same approach that is used for contaminated soil is used to assess the direct human exposure risk of mulch, the wood must be free of CCA-treated wood.
- When considering leaching, CCA-treated wood must be present at levels of less than 1% to meet current groundwater standards.

Previous Results Indicated that CCA might Leach in a Landfill

- Small-scale laboratory leaching tests might not always present the correct picture.
- Plus, CCA-treated wood is one of only a number of components disposed in C&D landfills. Besides untreated wood, other components are concrete, metal, drywall, etc.
- How does CCA-treated wood behave in actual landfills?

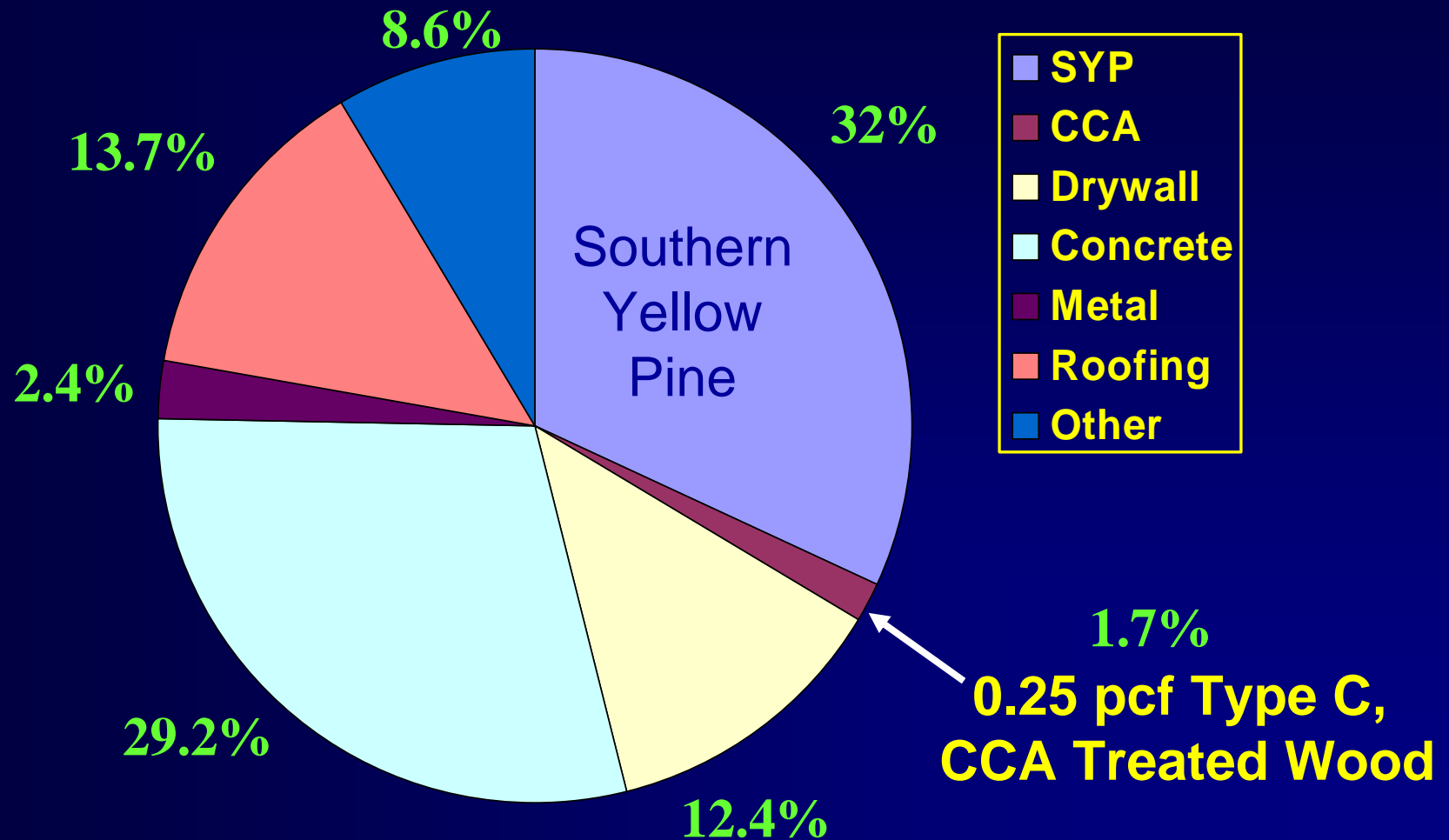
Laboratory Column Tests

- As part of ongoing work characterizing C&D waste leachate, C&D landfills have been simulated in the lab.
- While laboratory testing can never fully duplicate actual landfill conditions, such testing can provide very valuable information.
- The most recent round of laboratory tests included CCA wood as part of the waste stream.

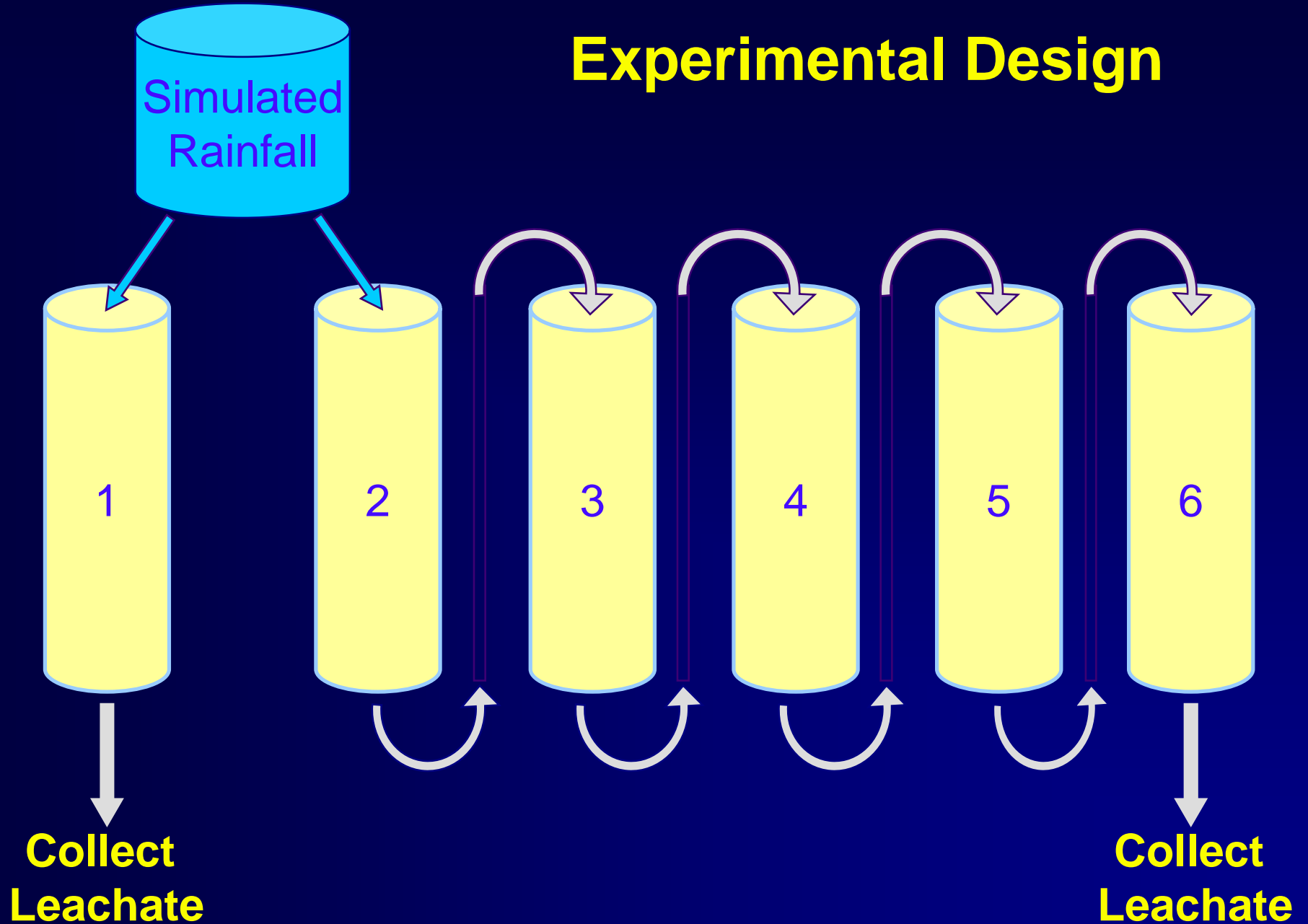
Laboratory Leaching Columns



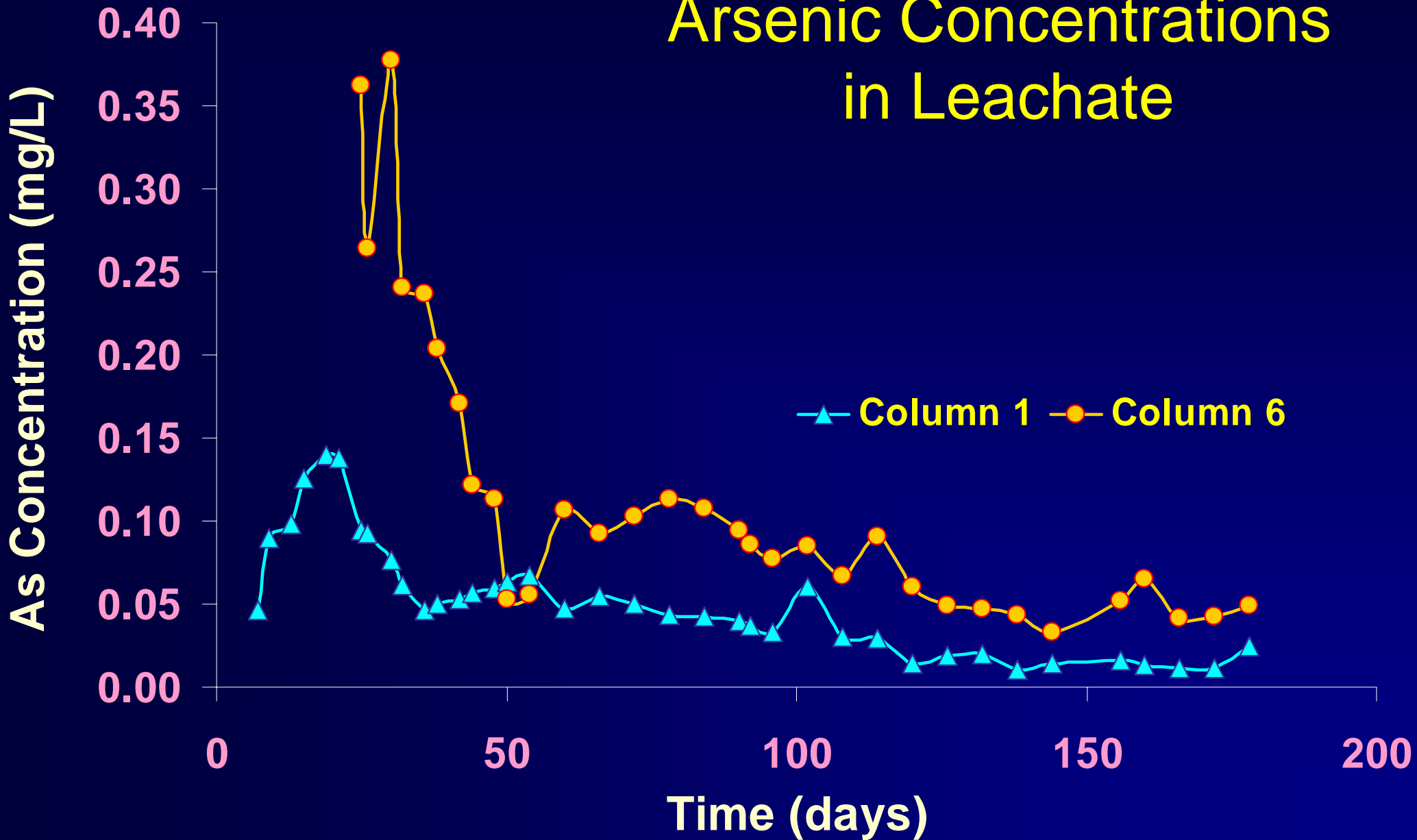
Composition of C&D Test Columns



Experimental Design



Arsenic Concentrations in Leachate



Implications of Column Study

- Only a small amount of CCA-treated wood in the waste stream can result in leachate exceeding the groundwater cleanup target level for arsenic.

Field C&D Test Cells

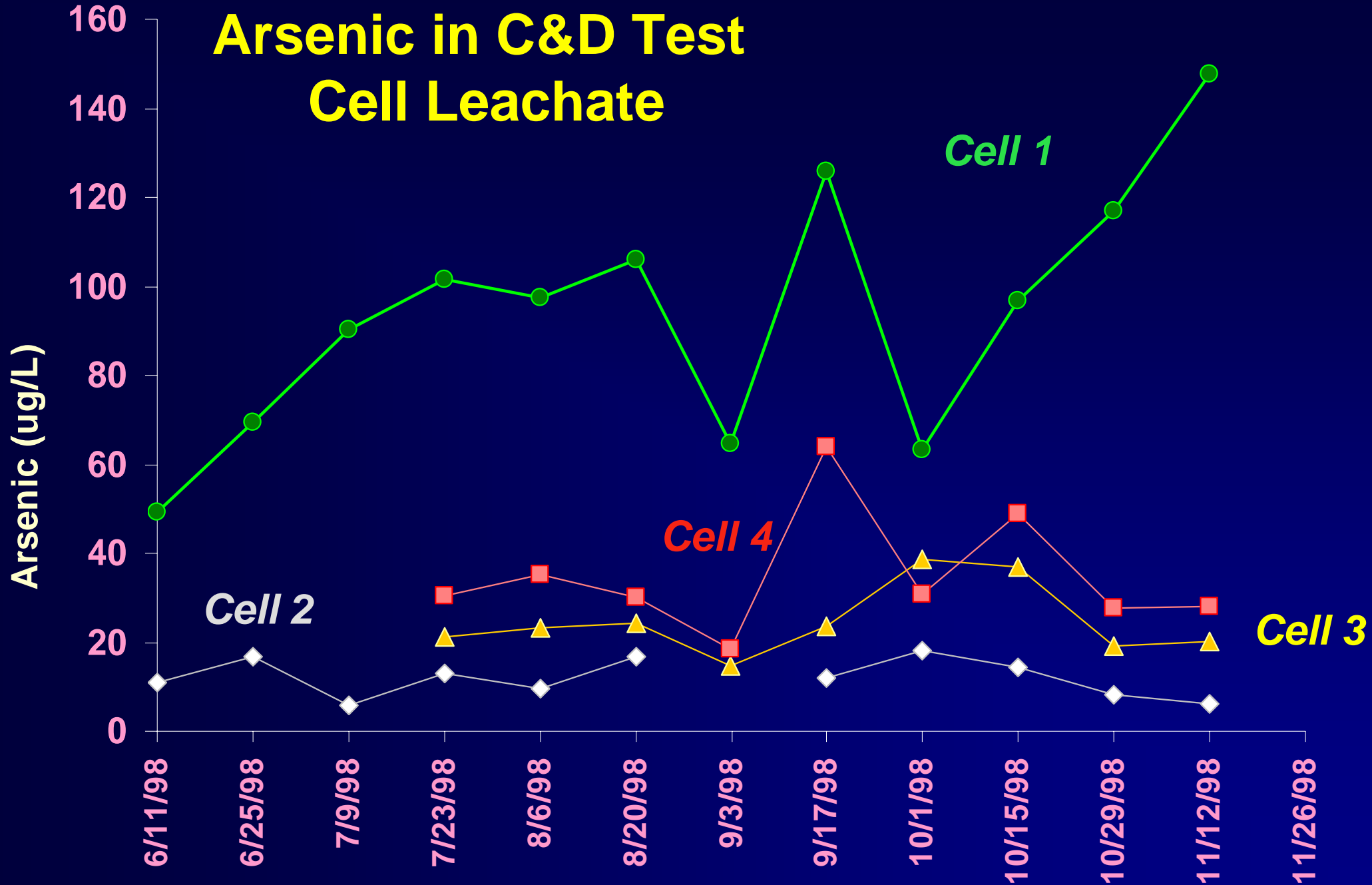
- Additional work on the characterization of C&D waste leachate involved the construction of 4 lined test cells.
- The cells were filled with residential construction debris.

Field Test Cells

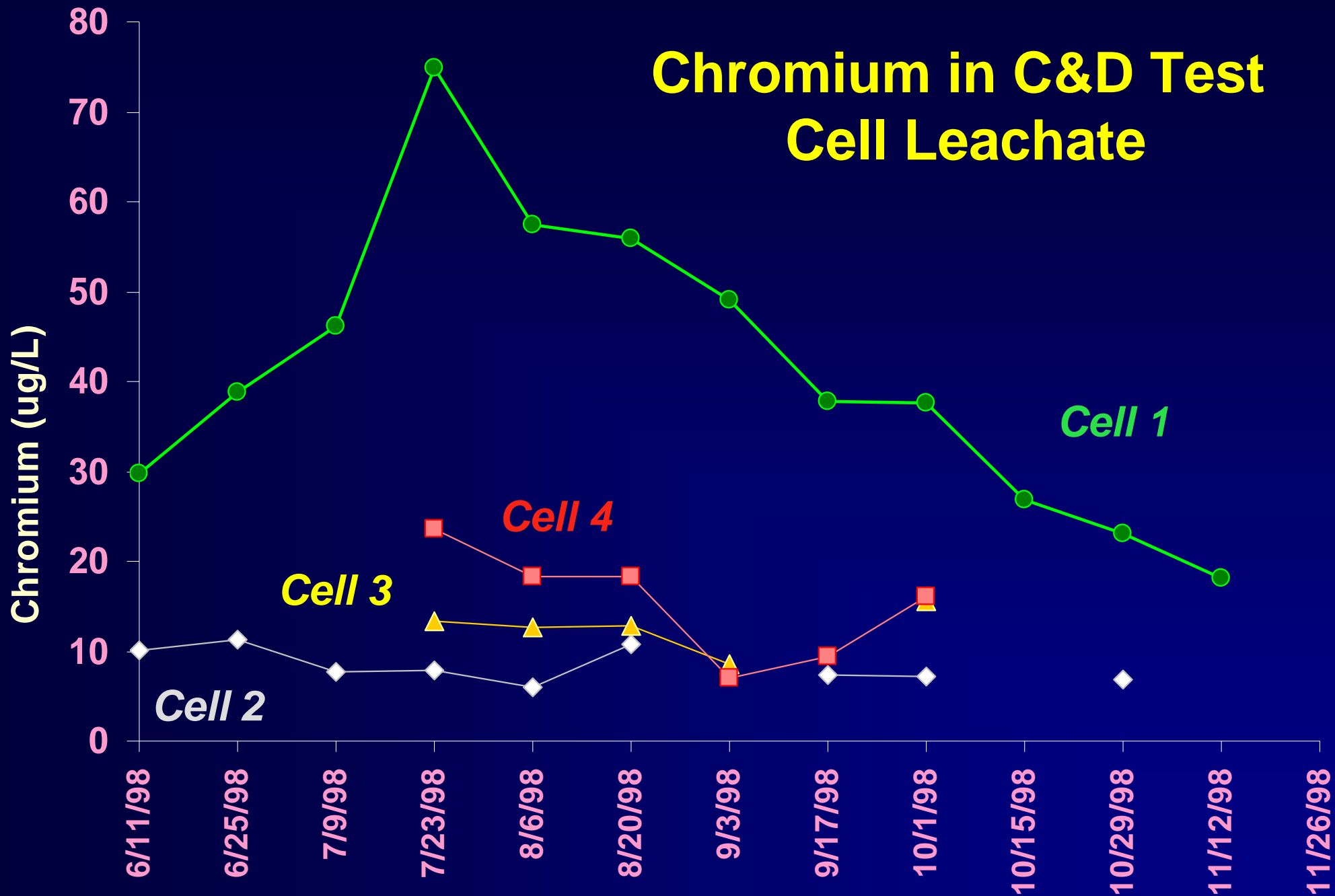
- Leachate that resulted from rainfall infiltrating through the waste was collected and analyzed.
- Arsenic, Copper, and Chromium were included as part of the analysis.



Arsenic in C&D Test Cell Leachate



Chromium in C&D Test Cell Leachate



Implications of Tests Cell Results

- The presence of CCA-treated wood may present an environmental risk during disposal in unlined landfills.
- Leachate constituent concentrations in actual C&D debris landfills of similar waste composition will be greater (deeper waste, more compact landfill).

**Arsenic Concentration in Leachate from
Lined Florida Class III Landfills Which Take
Primarily C&D Waste (In ug/L)**

Site	Min	Max	Ave of Detects	#Detects
PBCSWA Site Cell C	7	77	21	18
PBCSWA Site Cell D	13	33	22.3	6
West Pasco 1	4	125	77.5	4

Summary of Environmental Issues

- Ash with even very small amounts of CCA can not be applied outside the landfill.
- When wood fuel contains 3 to 5% or more CCA-treated wood, the resulting ash will very likely be a hazardous wastes.

Summary of Environmental Issues

- Although exempt under RCRA, discarded CCA treated wood will at times exceed the toxicity characteristic under RCRA.
- The presence of CCA-treated wood in processed C&D wood used for mulch greatly limits this reuse option for wood. Amounts as small as 1% may cause exceedances of drinking water standards for arsenic with the SPLP.

Summary of Environmental Issues

- Leachate from C&D debris landfills containing CCA-treated wood does contain arsenic and chromium, often at levels above regulatory limits.
- Disposal of CCA-treated wood should be in lined landfills.

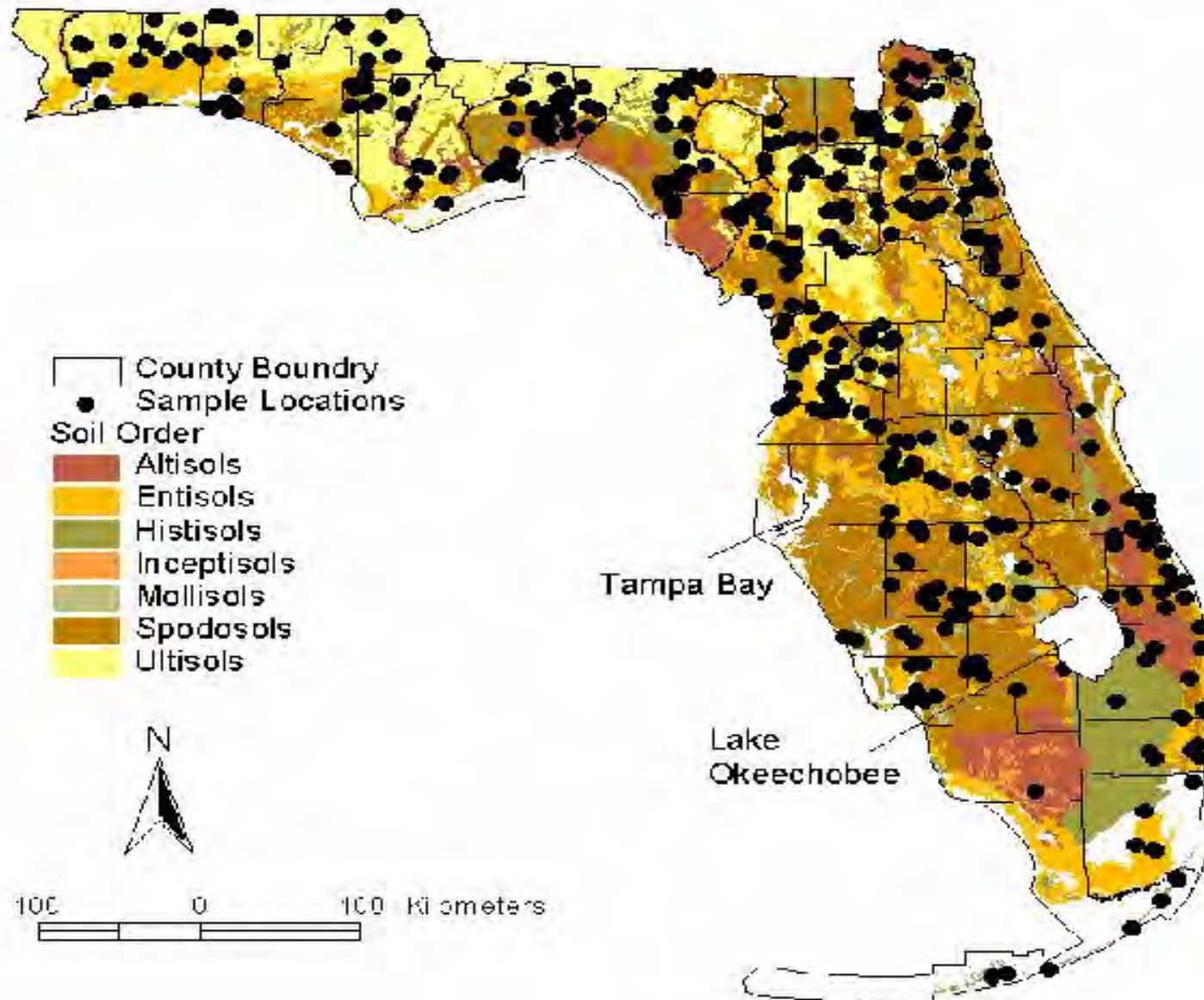
III. Potential Soil Contamination Issues

Background Concentrations of Arsenic in Florida Surface Soils

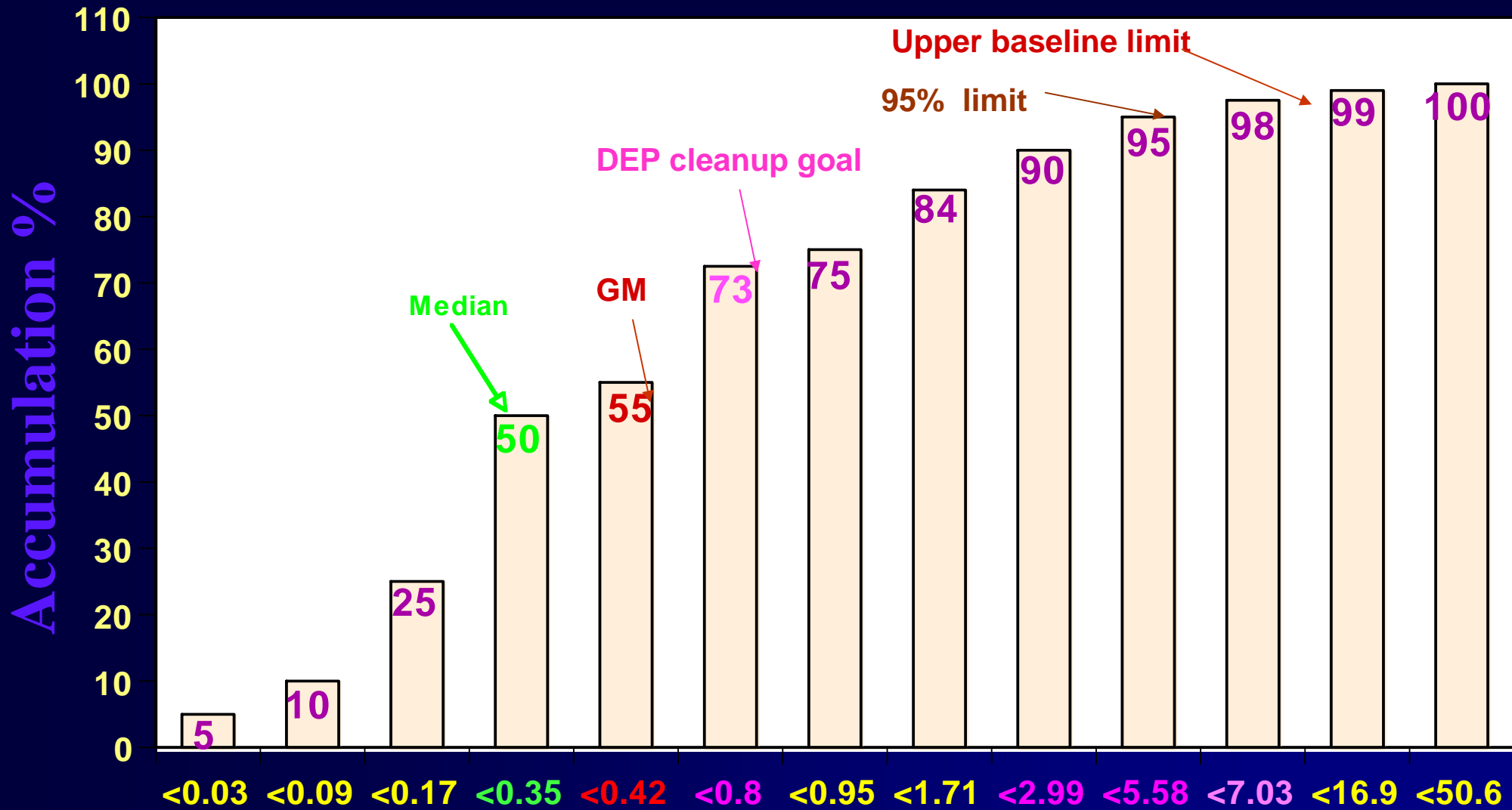
M. Chen, L.Q. Ma, W.G. Harris & A.G. Hornsby

Soil and Water Science Department
University of Florida

Geographical representation

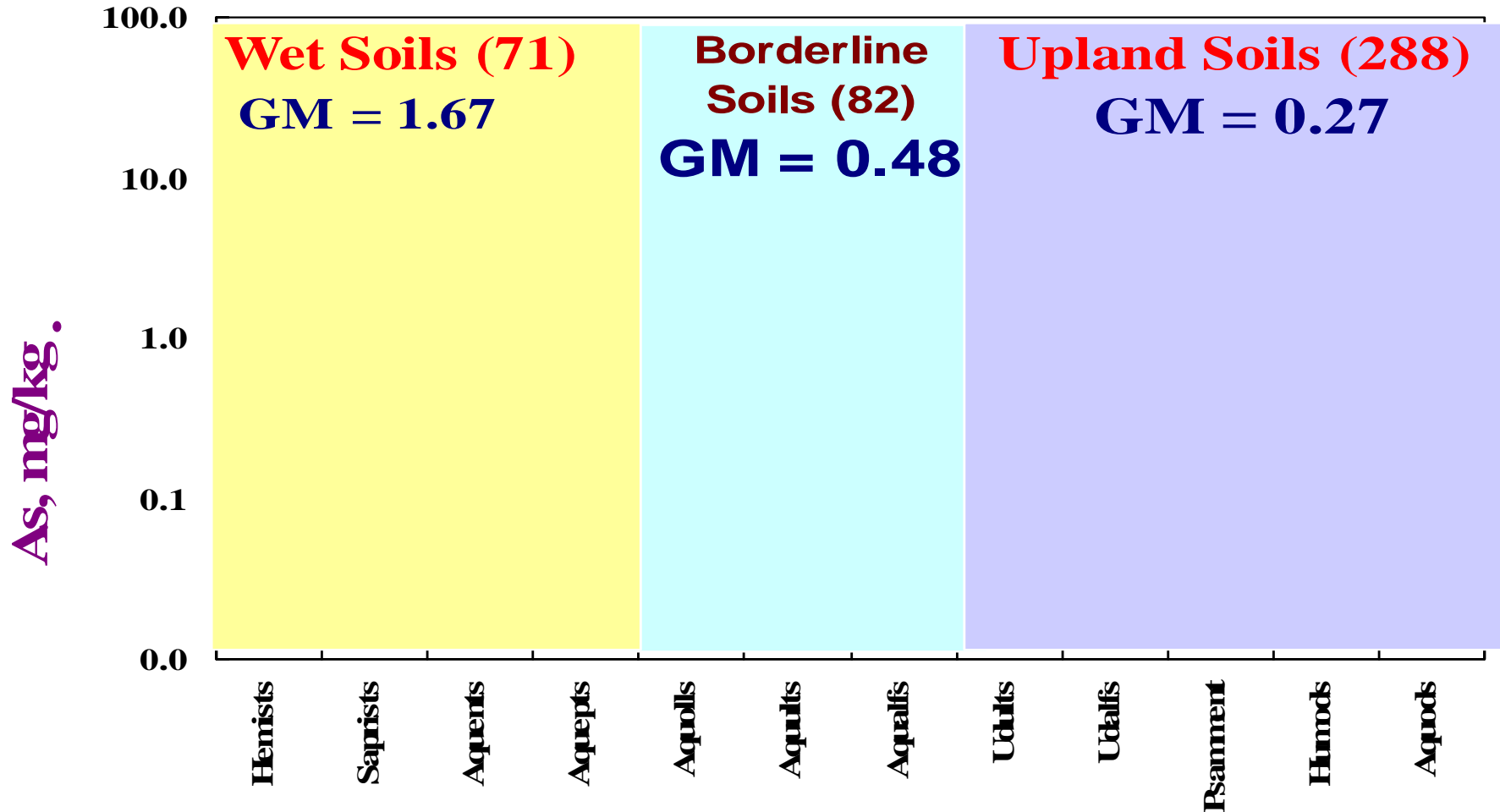


Arsenic Concentrations and Frequency Distribution



Arsenic concentrations in soils

Arsenic Concentrations (ppm) in Wet, Borderline and Dry soils



Arsenic Concentrations in Soil Samples From Beneath CCA Treated Decks in Connecticut (mg/kg)

Deck #	Deck Age	Range	Avg.	Background Soil Avg.
1	.3	3-19	9	2.6
2	2	7-91	34	4.2
3	5	34-99	61	4.9
4	7	44-333	139	4.9
5	7	57-215	113	2.7
6	8	50-350	138	4.4
7	15	6-80	40	1.9
Overall		3-350	76	3.7

Source: Stilwell, D.E. and K.D. Gorny. 1997. "Contamination of soil with Copper, Chromium and Arsenic Under Decks Build from Pressure Treated Wood". *Bull. Environ. Contam. Toxicol.* (1997) 38:22-29

Local & State

Section B: Obituaries 4B • Television 8B • Comics 9B • Weather 10B

• The Gainesville Sun

PLAYGROUND AT TERWILLIGER CLOSED

Pesticide found at Kidspace

■ Additional soil tests will be conducted after the chemical from pressure-treated wood was found, but the school will open Monday.

By DORIS CHAMBLER

Staff writer

Above-normal soil concentrations of a pesticide used on pressure-treated lumber have forced the temporary closure of Kidspace playground at Terwilliger Elementary School.

Kidspace, which consists of many wooden play structures, was built 12 years ago by hundreds of volunteers. The school is located across from the Oaka Mall on NW 62nd Street.

The Alachua County School Board has hired CH2M Hill, a consultant, to do further soil tests to determine the levels of Chromated Copper Arsenate (CCA — chromium, copper and arsenic), the pesticide most commonly used now as a wood preservative in pressure-treated wood.

"Preliminary tests done by the Florida Center for Solid and Hazardous Waste Management determined concentration of metals in the soil that are above normal. Therefore, we will close off the playground to the general public until further notice," said Grace White, Alachua County school district spokeswoman.

White said a University of Florida professor, who had gotten a grant from the Center to take soil tests at playgrounds, apparently notified the center of the results.

Continued on Page 1B



Kidspace

at Terwilliger

A Playground Built By Volunteers

November 18th - 22nd 1987



RULES OF KIDS SPACE

- NO SKATEBOARDS OR BIKE RIDING.
- NO BARE FEET. WEAR PROPER FOOTWEAR
- NO ALCOHOLIC BEVERAGES ON



Arsenic concentrations in soil samples taken on 8/4/99 around the school playground

Sample ID	Sample location	wt (g)	vol (L)	Response (ug/L)	dilution	Concentration in soils (mg/kg)	Target	% recovery
Blank	Reagent blank	1.0	0.1	3.5	1	0.35		
Reference	SRM 2710	1.0	0.1	267.2	20	534	626	86%
Reference	SRM 2710	1.0	0.1	314.5	20	629	626	101%
1	under east stair ramp	1.0	0.1	32.6	1	3.26		
2	east ramp-btwn boards	1.0	0.1	151.4	1	15.1		
3	slide pole	1.0	0.1	65.8	1	6.58		
4	under deck	1.0	0.1	89.1	1	8.91		
5	front end of car	1.0	0.1	69	1	6.90		
6	inside car	1.0	0.1	146.3	1	14.6		
7	front ramp-btwn boards	1.0	0.1	160.6	1	16.1		
8	picnic table	1.0	0.1	118.7	1	11.9		
9	west pole @ swing	1.0	0.1	63.6	1	6.36		
10	under seating deck	1.0	0.1	208.9	1	20.9		
11	under jungle gym	1.0	0.1	141.9	1	14.2		
12	under tire manhole	1.0	0.1	37.1	1	3.71		
13	under "bath tub"	1.0	0.1	51.7	1	5.17		
14	upper tunnel	1.0	0.1	59	1	5.90		
15	under tunnel	1.0	0.1	50.5	1	5.05		
16	under tunnel platform	1.0	0.1	289.8	1	29.0		
17	clean soil	1.0	0.1	2.5	1	0.25		
18	east steps	1.0	0.1	54.8	1	5.48		
19	electric pole east	1.0	0.1	356.3	1	35.6		
20	electric pole west	1.0	0.1	118.8	1	11.9		
21	"bark" from e-pole west	0.5	0.1	2290	20	9160		

Mean arsenic concentrations in soils = 10.9 mg /kg



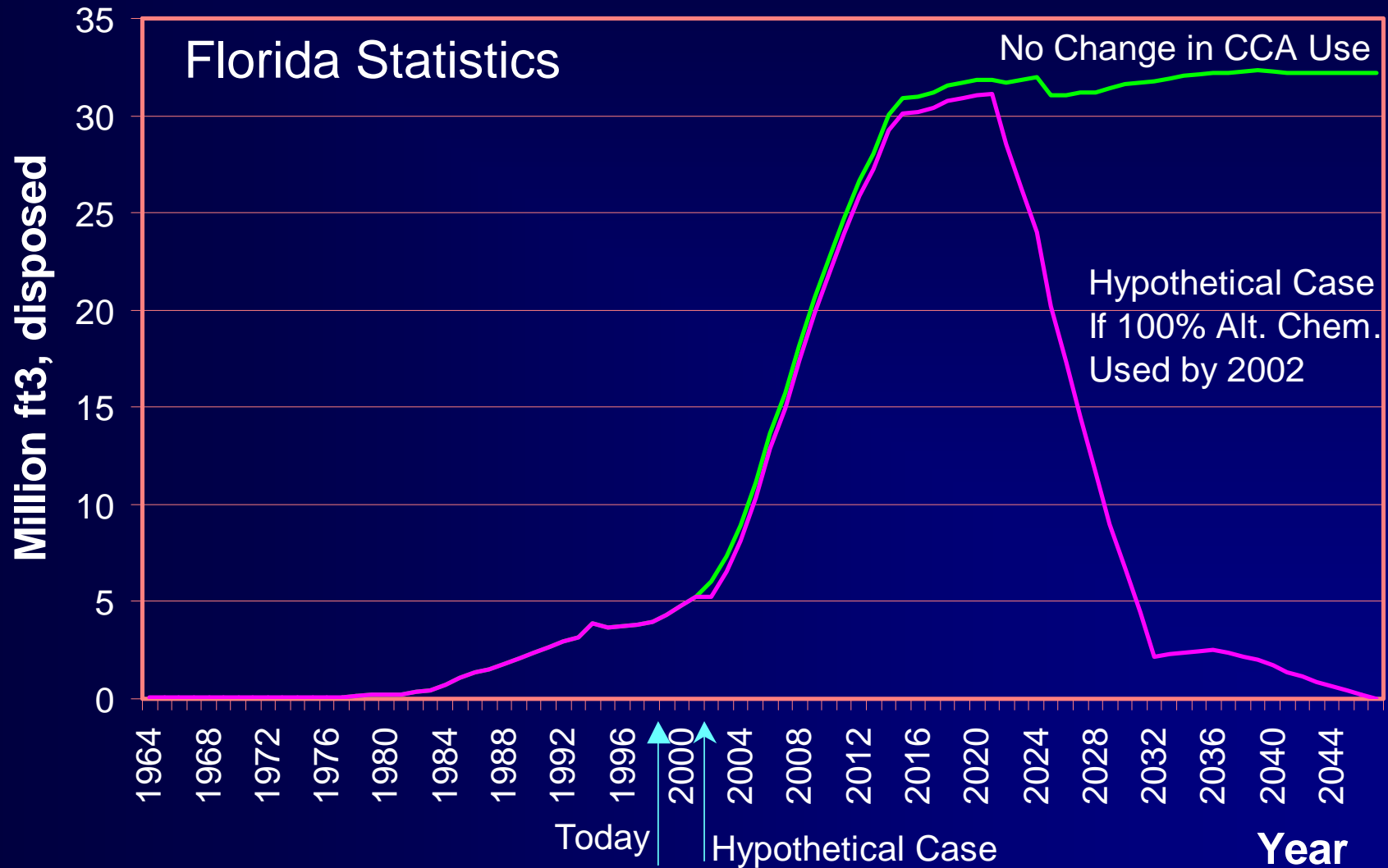




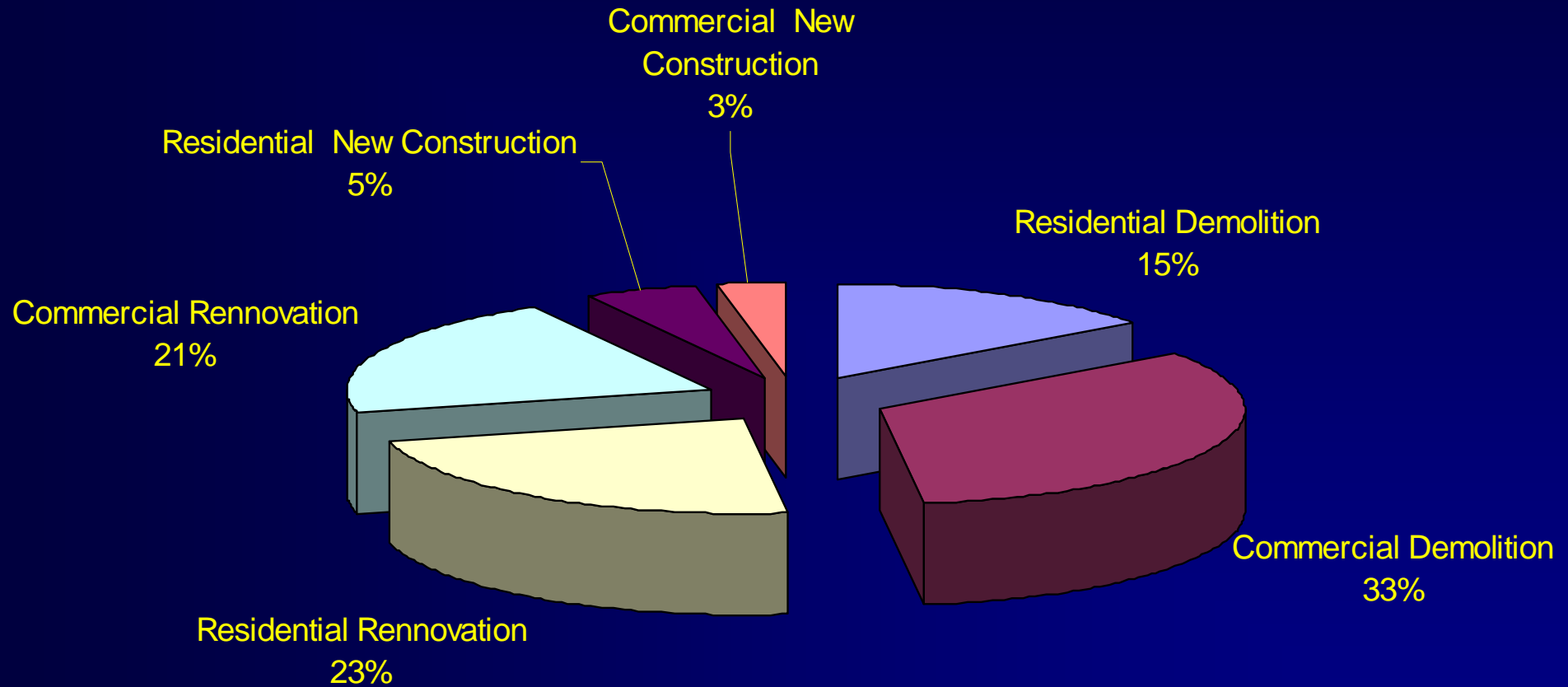


IV. Management and Regulatory Options

Long-term Disposal Forecast



Sources of Construction and Demolition Debris in the U.S. (EPA, 1998)



Construction and Demolition (C&D) Landfills In Florida

- 168 Permitted Sites Total:
 - 97 All C&D Debris
 - 71 Landclearing Debris Only
 - Down from 278 in 1996
- Sites taking all C&D Debris must have ground water monitoring, financial assurance, other BUT no liners

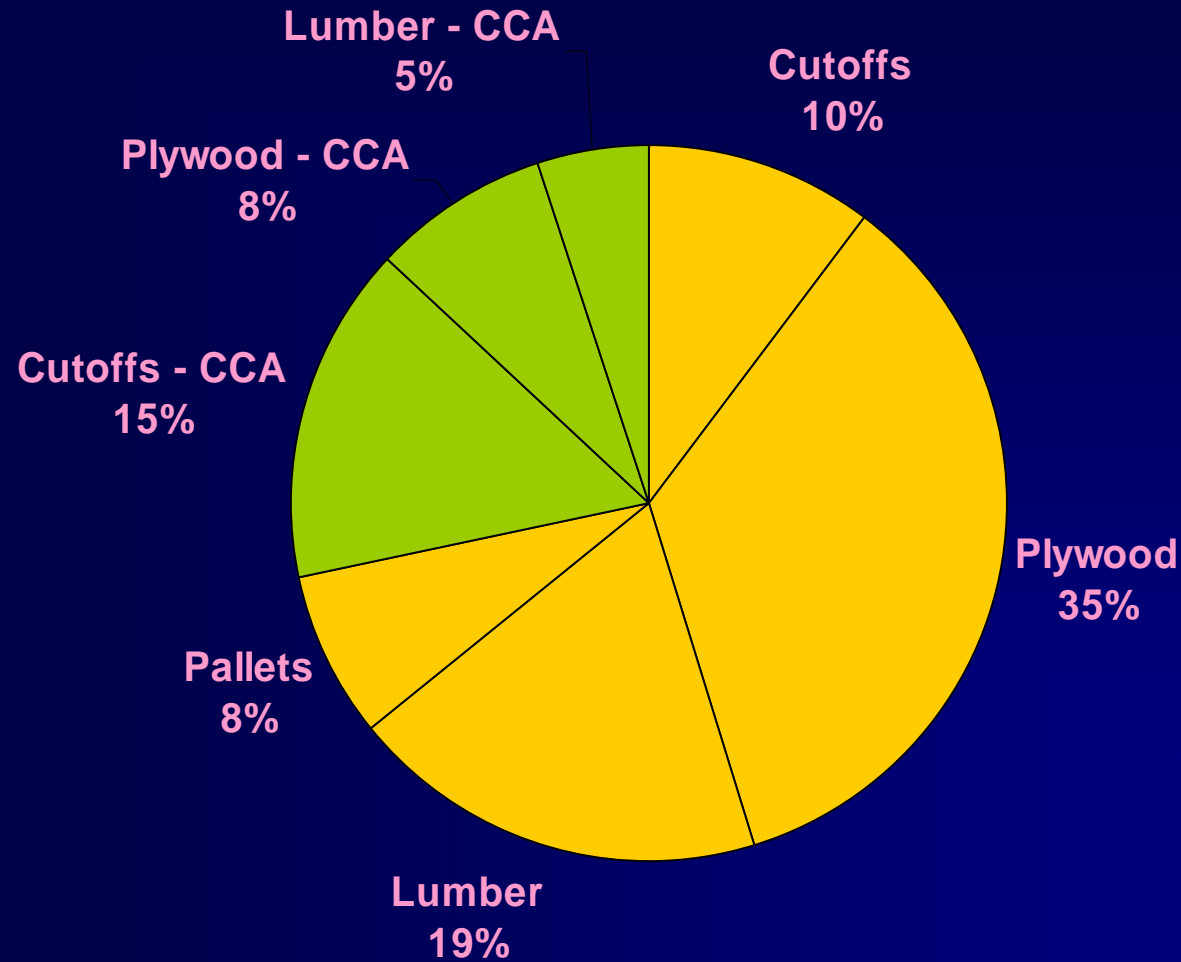
Potential Management Options For CCA Treated Wood

- Source separation at const./demolition sites
- Identification/separation at C&D MRFs
- Work with large end-users (e.g. utilities, FDOT, agriculture)
- “Take back” program for poles and pilings
- Mark/stamp CCA and non-CCA wood

Sorting Study



Sorting Study Results: Construction Debris



Identifying CCA-Treated Wood in Mixed Wood Streams

- Chemical Stains Very Promising
Advantage: Low Capital Cost
Disadvantage: Labor Intensive

- X-ray Fluorescence Very Promising
Advantage: Potential for On-line System
Disadvantage: Cost

Treated Untreated





Potential FDEP Regulatory Options For CCA Treated Wood

- Prohibit disposal at unlined C&D landfills
- Require disposal in lined landfills
- Require separation at C&D MRFs
- Prohibit production of mulch from CCA wood
- “Unadopt” CCA exemption in 261.4(b)(9)CFR
- Remediation at existing C&D sites?

Estimates of Mercury in Florida Discards (Tons)

Product/Year	1995	1996	1997	2000
Household Batteries	7.42	5.63	3.65	1.24
Electric Lighting	1.11	1.17	1.25	0.98
Switches, thermostats	2.96	2.97	2.93	3
Other (amalgams, etc)	0.44	0.41	0.38	0.3
Total	11.93	10.18	8.21	5.52

Estimates of Lead in Florida Discards (Tons)				
Product/Year	1995	1996	1997	2000
Veh. Batts (95%recy)	4646	1524	2567	2586
Small Sealed Batts	339	377	402	572
TV Tubes	1144	1144	1144	1768
Computer CRTs	691	742.00	736	1033
Glass&Ceramics	450	453	456	463
Circuit Bds	141	123	105	51
Plastics	166	137	124	127
Other(solder, cans)	169	144	142	138
Total	7745	4644	5676	6738

Estimates of Cadmium in Florida Discards (Tons)

Product/Year	1995	1996	1997	2000
NiCd Batteries	100.24	112.99	123.86	185.43
Plastics	10.47	10.49	10.52	10.58
Pigments	0.52	0.52	0.52	0.52
Plating	4.11	3.00	3.07	1.51
Other (Rubber, misc)	6.92	7.62	2.56	2.65
Total	122.26	134.62	139.93	200.69

V. Alternative Wood Preservatives

Alternative Wood Preservatives

Chemicals Meeting These Criteria

- AAC: Alkyl Ammonium Compound (a.k.a. DDAC)
- ACC: Acid Copper Chromate
- ACQ: Ammoniacal Copper Quat
- Borates
- CBA: Copper Boron Azole
- CC: Ammoniacal Copper Citrate
- CDDC: Copper Dimethyldithiocarbamate

Alternative Chemicals - Status

- AAC - Three AAC manufacturers were contacted and all indicated that AAC is not generally marketed as a “stand-alone” wood preservative.
↗ ACQ, Cu + AAC.
- Borates - Can not be used outdoors ↗ taps into a NEW treated wood market, “whole house”
- ACC - Contains Chromium

Remaining Chemicals: ACQ, CBA, CC, CDDC

Use	Product	ACQ Type B&D	CBA	CC	CCA	CDDC
Above ground	lumber, timbers, ties	0.25	0.204	0.25	0.25	0.10*
Above Ground	plywood	0.25		0.25 ^E	0.25	
Soil or Water Use	lumber, timbers, ties	0.40		0.40	0.40	0.20
Soil or Water Use	plywood	0.40		0.40	0.40	
General Construction	posts and columns	0.40		0.40	0.40	0.20
Structural Composites	lumber & timbers	0.60			0.60	0.20
Used on Permanent Wood Foundations	lumber & plywood	0.60			0.60	
Highway Construction	poles	0.60			0.60	
Land and Freshwater Foundations	piles				0.80	
Marine & Coastal Waters	lumber, timbers, ties, & plywood			2.50	2.50	
Marine & Coastal Waters	piles				2.50	

AWPA Standardization, Values Provided are Chemical Retention

Alternative Chemical Costs

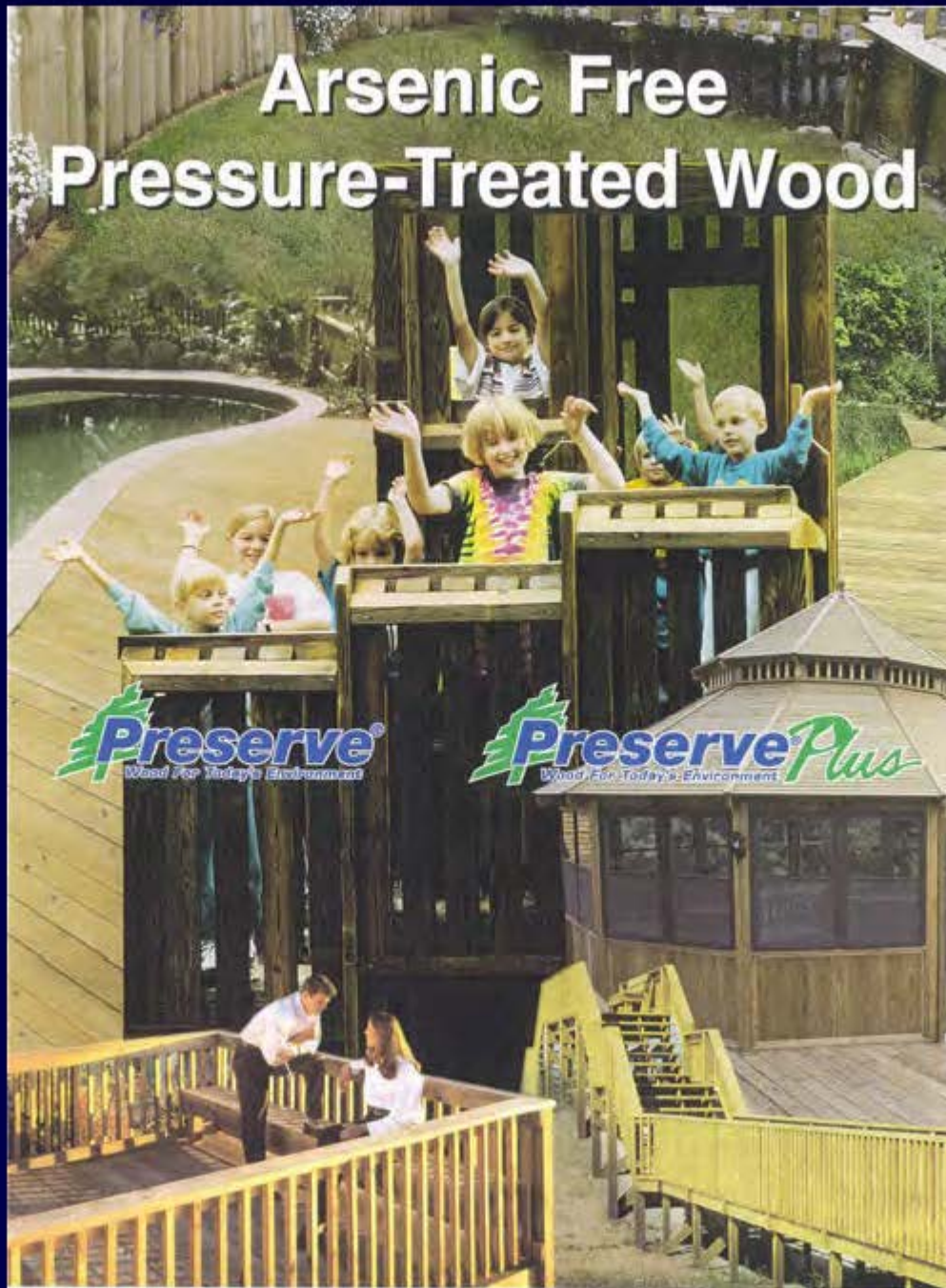
Costs for a 12 foot deck board (1 1/4" x 6 ")

CCA	CDDC	ACQ	ACQ with Water Repellant
\$8. ⁹⁴	\$10. ²⁹	\$9. ⁹⁰	\$11. ⁴⁷
(\$6. ⁹⁹ -\$11. ⁶⁹)	(\$9. ²⁸ -\$12. ⁰⁰)	(\$9. ²⁹ - \$10. ⁵⁰)	(\$9. ⁹⁵ -\$14. ²⁵)
n=15	n = 16	n = 2	n = 10

Restrictions and Bans on CCA in Other Countries

- Total bans: Switzerland, Vietnam, Indonesia
- Restrictions: Japan, Denmark, Sweden, Germany

Arsenic Free Pressure-Treated Wood



Preserve
Wood For Today's Environment

Preserve Plus
Wood For Today's Environment

“The ACQ preservative in *Preserve* treated wood is a copper plus quat system that provides the same level of protection to wood as CCA preservatives against decay, rot and termite attack without the use of arsenic and chromium.”



Creating Durability

COPPER AZOLE PRESSURE TREATED TIMBER

Answers to
commonly asked
questions

“...Copper Azole is a significant improvement over traditional CCA treatment as it substantially reduces reliance on and exposure to the more toxic heavy metals such as chromium and arsenic throughout all stages of production, distribution and use. ...it is environmentally responsible to specify or use Copper Azole treated lumber.”

Announcing New Tanalith® E



Koppers-Hickson is pleased to announce the New Zealand launch of our new non-chromium, non-arsenic preservative product, Tanalith®E.

Why a new product ?

Tanalith® CCA has a proud record of use in NZ for more than 50 years, and internationally for longer still. In this time it has been proven to be an effective and safe product to use, protecting countless millions of cubic metres of timber from biological attack. As effective as it is however, the continued use of CCA is coming under threat due to the potential and perceived threats posed by the inclusion of heavy metals like chromium and arsenic as key ingredients.

The threats to CCA use have arisen in different forms in different countries. In Japan, CCA is falling out of favour due to restrictions on landfill disposal of treated wood that has been removed from service, and also difficulty meeting tough stormwater limits at treatment plants for arsenic. In parts of Scandinavia, CCA use has been restricted to in-ground and industrial timber applications only.

Closer to home, we find that due to perceived risks and the wish to promote an "eco-friendly" image, no CCA-treated wood may be used in the Sydney Olympic village; the NSW Department of Public Works is intending to adopt the same policy for all it's construction from 2000 on.

In NZ no restrictions have so far been imposed on CCA use, however ground contamination and stormwater discharge limits may force treaters and retailers to upgrade storage areas to minimise the impact of leachate from freshly CCA-treated wood.

The Hickson world-wide group of companies (of which Koppers-Hickson is a member) have been aware of these developing trends for some time, and have been developing Tanalith® E as a possible CCA-alternative.

“The aim of the development program was to create a wood preservative that had the same excellent timber durability properties as CCA but without the inclusion of chromium or arsenic. An additional desired feature was complete compatibility with existing CCA treatment plants and processes.”





Key Unknowns

- Current EPA re-registration review and recommendations in RED (Spring, 2000?)
- Revisions to As MCL (Jan, 2001?)
- Results of As Bioavailability Study
- Additional FL soil contamination studies
- Actions by the European Community